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Studying the Prevalence of Depression among Diabetic Patients in Primary Care

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This is to certify that the doctoral study by

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Abstract

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MS, Bowie State University, 2013

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Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

The prevalence of diabetes in the United States in 2015 was 30.3 million people; which is the equivalent of 9.4% of the population. It is a major contributor to morbidity and mortality. Depression is often underdiagnosed in these patients, which contributes to poor self-management and poor health outcomes. In a large primary-care practice on the East Coast, there is no guideline for depression screening in the diabetic population. Focusing on this specific primary care setting, the research question addressed the underdiagnoses of depression in diabetic patients. The project evaluated the prevalence of depression among patients diagnosed with diabetes by using the U.S. Preventative Services Task Force (USPSTF) depression screening tool called the Patient Depression Questionnaire. The Grove Model for Implementing Evidence-Based Guidelines in Practice Framework was used in systematically integrating the new practice guideline of screening all diabetes patients for depression. The framework involves identifying the practice problem, locating, and collecting the most well-founded evidence, and evaluating the quality of the evidence-based guideline of screening all diabetes patients for depression. To answer the project question, 135 diabetic patients in a primary care outpatient setting completed the Patient Depression Questionnaire. Descriptive statistics was used to describe the sample and determine the frequency of scores throughout the sample of patients. Ranges of scores and percentages were computed using frequency distribution. Of these 135 diabetic patients, 63.7% showed some level of depression ranging from mild to severe, which was undiagnosed prior to the administration of the screening tool. As a result of the project, recommendations were made to the site to implement the use of the depression screening tool as policy.

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Dedication

To my father the late Bishop Charles E. Hood and my mother the late Shirley M. Spears-Hood, whose strength, courage, determination, and prayers have brought me through.

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I would like to express my sincerest thanks to my committee chair, Dr. Catherine Garner, and committee members. I would also like to thank my family and friends who have supported and helped me reach this significant goal in my academic career.

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Section 1: Nature of the Project

Introduction

Depression is associated with morbidity, poor quality of life and mortality; is recognized as a major health problem for people with diabetes (Winkley, 2013). According to the Centers for Disease Control and Prevention [CDC] (2013) "Depression is characterized by depressed or sad mood, diminished interest in activities that used to be pleasurable, weight gain or loss, psychomotor agitation or retardation, fatigue, inappropriate guilt, difficulties concentrating, as well as recurrent thoughts of death" (p. 1). According to the CDC (2013), just one episode of depression places an individual at a 50% risk for experiencing another episode. In addition to diabetes increasing the risk for depression, diabetes also can make symptoms of depression worse (National Institute of Mental Health [NIMH], 2011).

The stress of diabetic self-management, such as daily monitoring of blood sugar, adherence to diabetes medication regimen, eating health and staying active, can contribute to depression in diabetic patients. Some of the symptoms of depression, such as weight gain, overeating and decreased interest in self-care, can worsen the symptoms of diabetes. People with diabetes and depression have more severe diabetes symptoms than people who have diabetes alone (NIMH, 2011). Even though diabetic depression can have adverse implications on diabetic self-management, treatment does not guarantee that the patient will be compliant (National Institute of Mental Health, 2011).

The purpose of the project was to study the prevalence of depression among patients diagnosed with diabetes utilizing the USPSTF depression screening tool; the Patient Health Questionnaire (PHQ-9). Adding this tool to the visits for routine diagnostics and monitoring

may help identify those patients with depression whether caused or exacerbated by the diabetes. This data might help explain why some diabetic patients also have self-management challenges. Better management of diabetes has implications for social change: Better management yield improved health status and fewer complications.

Background

A growing body of scientific evidence has shown that untreated depression in combination with diabetes causes significant adverse outcomes (Arokiasamy et al., 2015; Cummings et al., 2016; Kimbro et al., 2014): increased risk for diabetes-related complications, such as heart disease, blindness, limb amputations, stroke, and kidney disease (World Federation for Mental Health [WFMH], 2015). Much ground has been gained in explaining the links between diabetes and depression. Ajilore et al. (2007) and Black et al. (2003) suggested that (a) each disease is a risk factor for developing the other, (b) the two disorders may share similar patho-physiological mechanisms, and (c) depression may indicate particularly severe underlying diabetic illness (WFMH, 2015). The study conducted by Katon et al. (2009) found that people with diabetes are at least twice as likely to have depression as those in the general population.

Problem Statement

Depression is often under-diagnosed in patients with diabetes, and thus contributes to poor self-management and poor health outcomes (CDC, 2014). The prevalence of diabetes in the United States in 2015 was 30.3 million people; which is the equivalent of 9.4% of the population (CDC, 2017). Diabetes is a major contributor to morbidity and mortality (CDC, 2014). At a large East Coast, primary care practice with approximately 2,000 medical and psychiatric patients-of which 50% receive both medical and psychiatric services; 50% are elderly, 40% are young to middle aged and 10% are children and adolescents. There are no guidelines for

mandatory depression screening for all diabetic patients within this primary-care practice. Many

of the antidepressant medications increase the risk for diabetes because of the effect on appetite

and weight gain (Bernard et al., 2013). Because of its mixed population of patients this practice

is ideal for studying the prevalence of depression among diabetic patients.

Purpose Statement

The purpose of this quality improvement study was to introduce a validated depression

screening tool into advanced nursing practice in caring for patients with both newly diagnosed

and on-going diabetes management. It was expected that the use of a routine screening tool

would increase the rate of diagnosis and treatment of depression, ultimately contributing to

improved self-management and thus diabetic control (Bogner et al., 2012). This practice

improvement project evaluated the prevalence of depression among patients diagnosed with

diabetes using PHQ-9, the USPSTF depression screening tool. This nine-question patient

questionnaire is self-administered. After the patient answered the questions, all responses were

verbally review by the clinician and the patient to ensure accurate responses to the questions. As

patients with diabetes and depression were identified they were referred for mental health

services within the practice and monitored. After the baseline assessment is established in this

study, the patient will fill out the questionnaire again at the follow-up visits to compare results on

symptomatic improvement or the need for treatment modification. The practice-focused

question was as follows: "What is the prevalence of depression among adult patients diagnosed

with diabetes?"

Nature of the Project

EBP is the underpinning of nursing practice. In order for EBP to be successfully translated into practice guidelines and strengthen healthcare delivery it must be adopted by individual care providers, microsystem, and system leaders, as well as policy makers (Stevens, 2013). Nurse leaders constitute the facilitators for the process of adoption of EBP. DNP-prepared nurse leaders are the valuable link between research and practice that helps substantiate the use of EBP throughout the entire healthcare delivery system (White, Dudley-Brown, 2012). Nurses go beyond simply applying evidence in practice and actively evaluating the results. When evidence that is generated from studies is applied to practice in a realistic way, the evidence is said to have been *translated* and healthcare delivery is subsequently strengthened (White & Dudley-Brown, 2012). Nurses are essential in translating evidence into meaningful performance improvement (White & Dudley-Brown, 2012).

The quality improvement structure for this project was the Plan-Do-Study-Act (PDSA). The PDSA cycle describes the growth of knowledge through making changes and then reflecting on the consequences of those changes (The National Diabetes Education Program, 2015). This model helps inform three fundamental questions of this project:

1. What are we trying to improve? (the aim)

2. How will we know that a change is an improvement? (measurement)

3. What change can we make that will result in an improvement? (plan)

W. Edwards Deming in 1993 created this model which was based on physics principles. The PDSA Cycle is a systematic series of steps for gaining valuable knowledge for the continual improvement of a product or process (The W. Edwards Deming Institute, 2016). Also known as

the Deming Wheel, or Deming Cycle, the concept and application was first introduced to Dr.

Deming by his mentor, Walter Shewhart of the famous Bell Laboratories in New York (The W.

Edwards Deming Institute, 2016). The PDSA cycle can appear somewhat cumbersome and

complex: however, it is identifying, describing, and providing structure for a natural process

whereby groups and teams initiate change within their systems, whether within healthcare or

elsewhere (Donnelly & Kirk, 2015).   Using this explicit framework for managing a change

program ensured (a) that members did not drift from the initial objectives, and (b) that there were

valid, achievable measurements that showed improvement- if improvement were realized

(Donnelly & Kirk, 2015). The framework also provided the evidence to support that an

approach of this nature worked. Formalizing change management in this way makes it possible

to sell your intervention to others (Donnelly & Kirk, 2015).

When applying the PDSA model to diabetes and depression management, the aim is to

decrease depressive symptoms, improve blood glucose management to prevent hyperglycemia,

hypoglycemia, and long-term complications (The National Diabetes Education Program, 2015).

Improvement will be evident if (a) HgbA1c values reach target levels, (b) self-monitored glucose

levels are in pre-prandial and postprandial target ranges, (c) adherence to medication or if disease

improves a decrease in medication, and (d) hyperglycemia or hypoglycemia symptoms and

depressive symptoms are absent.

The evaluation process was based on the PDSA model; thus, the evaluation process took

place during the third stage of the study. The evaluation timeline was as follows:

Plan (Stage 1): Takes place 1-3 weeks before program launch date.

Do (Stage 2):   Takes place Week 4 which is the start date of the program.

Study (Stage 3)- At this stage, which starts at the 6-week period, is the first of the evaluation processes. During this stage, the following is determined:

- Did the plan for the program result in an improvement in the detection of depression in this diabetic population?

- Was the action worth the investment?

- Where there any unintended side effects?

Act (Stage 4) – During this phase the team determines if the plan was successful. Any improvements are then standardized and will begin to be used regularly. The long-term plan, which is outside the scope of this study, is that the tool will be used subsequently at each scheduled visit to monitor and compare to baseline results. Success is heavily contingent on ongoing evaluation. Program stakeholders, as well as participants require regular program updates to assess how well the program is doing. A well-organized evaluation plan can help ensure that the patient is benefiting from the health program.

Significance

This project has the potential to enhance evidence-based guidelines, which is the routine screening of diabetic patients for depression. The problem is the co-occurrence of depression in diabetes. It has been attributed to a variety of factors, including the psychological and psychosocial impact of the disease, common genetic susceptibility, common pathophysiological abnormalities, as well as microvascular brain lesions due to diabetes mellitus (Chew-Graham, 2014). This project has the potential to add to the literature to inform policy makers. Policy advancement requires a clear, concise statement of the problem and the consensus among stakeholders that the proposed policy will address the problem (Ridenour & Trautman, 2009).

Those who are directly and indirectly affected by the policy have influence on this process. The identified stakeholders are employers, health plans, providers, and advocacy groups.

Employers can translate their understanding of the impact of depression on productivity into funding for employee education programs. The idea is to increase awareness of depression's prevalence, symptoms, impact, and effect on other potentially comorbid conditions such as cardiovascular disease (CVD), diabetes, and cancer. Health plans can facilitate public understanding and awareness of depression and its impact through member education campaigns, similar to those used for CVD and cancer. They can offer incentives to network physician groups, using pay-for-performance models to improve the quality of care and outcomes for patients with depression and diabetes. Providers and medical groups can work toward the development and implementation of more up-to-date assessment and treatment guidelines, especially at the primary care level, to establish practice protocols that include standard screening for patients with CVD, diabetes, cancer, and other disorders associated with high rates of depression. Advocacy groups and other patient-representative organizations can help by (a) supporting employers, health plans, and practitioners in implementing desired reforms by providing educational materials and legislative assistance; (b)facilitating community involvement in promoting awareness of behavioral disorders and treatment options; and (c) reinforcing the importance of encouraging treatment adherence on the part of patients.

Summary and Transition

Section one identified the problem, purpose, question, and the overview of the evidence based project, studying the prevalence of depression among diabetic patients in primary-care. Depression is often underdiagnosed in diabetic patients, which contributes to poor self-management and poor health outcomes. The question this project sought to answer: "Is

depression underdiagnosed in diabetic patients in a specific primary care setting?" The purpose

of this project was to study the prevalence of depression among patients diagnosed with diabetes

by using the USPSTF depression screening tool PHQ-9. The identified problem is that although

there is a direct link between depression, diabetes, and poorer outcomes for patients with

diabetes, there are no clear depression screening policy recommendations for patients with type 1

and type 2 diabetes mellitus. Section two of this project identified the USPSTF recommendation

for routine use of the PHQ-9 for screening depression is the primary-care setting; the relationship

between diabetes and depression; conceptual model used to guide the project; role of the

Advanced Practice Registered Nurse in screening diabetic patients for depression; and the

relevance of this project to nursing practice.

Section 2: Background and Context

With such a large part of the United States population diagnosed with diabetes the true

prevalence of depression among this population is unknown (CDC, 2014). The purpose of this

quality improvement study was to introduce a validated screening tool for depression into the

advanced nursing practice. Patients with newly diagnosed and on-going diabetes management

would be treated. At this time, there is no estimate of depression among the diabetic patients in

the target primary-care center. The practice-focused question was "What is the prevalence of

depression among adult patients diagnosed with diabetes?" The use of a routine screening tool

may increase the rate of diagnosis and treatment of depression, ultimately contributing to

improved self-management and diabetic control (Unutzer & Mijung, 2012).

To identify prospective, peer-reviewed articles and books, the following databases were

searched for the past 5 years: Cochrane Database, Ovid Nursing, CINAHL, SAGE, MEDLINE,

and Google Scholar. The following keywords were used: *diabetes, diabetes management, diabetes treatment, depression medication and diabetes, diabetes and depression, depression, depression and chronic diseases, USPSTF depression screening tool, PHQ-9 and the PDSA model.* Data from the following agencies were valuable; Agency for Healthcare Research and Quality, Centers for Disease Control and Prevention, Joint Commission on Quality and Safety, National Institute of Mental Health, The National Diabetes Education Program, U.S. Preventative Services Task Force, and World Federation for Mental Health.

Measurement of Depression

USPSTF issued recommendations, encouraging primary care physicians to routinely screen their adult patients for depression in clinical settings that have systems in place to ensure effective treatment and follow-up (Unutzer & Mijung, 2012). The USPSTF recommendations are based on results from systematic reviews and meta-analyses conducted on depression screening. The systematic reviews and meta-analyses includes evidence from an earlier review of thirty-seven studies (Bower et al. 2006; search period 1966-2004) and a current review of thirty-two studies (search period 2004-2009, USPSTF, 2015). The PHQ-9 is a brief screening tool that screens for depression (USPSTF, 2015). Such brief screening tools can be easily administered by office staff, advanced practice providers and/ or physicians during a primary care visit. Positive response to these questionnaires should alert the primary care provider to further evaluate the patient for depression. Not all depressed patients will answer positively to these questionnaires. To address the possible false negatives, clinicians may wish to ask additional questions about depressive symptoms for patients who appear depressed, who have difficulty engaging in care, or whose functional impairment seems inconsistent with objective medical illness (Unutzer & Mijung, 2012).

PHQ-9 has demonstrated reliability, convergent/discriminant validity, and responsiveness to change (Cameron et al., 2008). The coefficient alpha range is from 0.83 to 0.92(Cameron et al., 2008). The concurrent validity was moderate for the PHQ-9, with a Pearson's correlation of .7 ($p < .001$) (Cameron et al., 2008). A study conducted by Cameron et al. (2008) to assess the psychometric properties of the PHQ-9 and the Hospital Anxiety and Depression Scale (HADS-D) for measuring the severity of depression in primary care patients found, that the psychometric properties of the PHQ-9 were reliable for internal consistency ($p < 0.001$) in measuring the severity of depression among a sample of 1063 primary care patients HADS-D (Cameron et al., 2008). In another study conducted by Hankerson et al. (2015), the PHQ-9 screening tool was used to assess the feasibility of screening for depression among African-Americans in a faith-based setting. The sample for the study consisted of 122 participants who were administered the PHQ-9 depression screening tool. From the sample screened, 19.7% were positive for depression, with more men positive than women (Hankerson et al., 2015). This study found that it was feasible to use the PHQ-9 to screen for depression and that the prevalence of depression in the population was higher among men (Hankerson et al., 2015). Even though this study was not conducted in a primary care setting, it was included to show the simplicity of administration of the PHQ-9.

In a study conducted by Landis et al. (2013), the PHQ-9 was used to identify 552 adult patients with depression in a family medicine residency program utilizing integrated collaborative care (ICC), which is the combination of medical and behavior health services. Patients that had been identified with depression from the utilization of the PHQ-9 were subsequently treated using three models of behavior health care over a five-year period within this program (Landis et al., 2013). During the five-year period, 42% of the patients who

screened positive for depression achieved remission, which provides evidence of the validity of the PHQ-9 to identify patients with depression and the use of behavioral health care services to treat the depression (Landis et al., 2013). A study conducted by Chin et al. (2016), used the PHQ-9 to identify 2,929 adult primary care patients with no past history of physician- diagnosed depression over a 12-month period to estimate the incidence and predictors of a positive screen for depressive symptoms. It was found in this study population that the cumulative incidence of PHQ-9 screened patients for depression was higher than those reported in earlier studies (Chin et al., 2016). The positive predictors where being female, lower socioeconomic status, smoker, and having two comorbidities (Chin et al., 2016).

The USPSTF found that screening and appropriate treatment relieve symptoms and reduce the number of people suffering from depression. The economic burden of depression is substantial for individuals as well as society. Costs to an individual may include suffering, possible side effects from treatment, fees for mental health and medical visits and medications, time away from work and lost wages, transportation, and reduced quality of personal relationships. Costs to society may include loss of life, reduced productivity (because of both diminished capacity while at work and absenteeism from work), and increased costs of mental health and medical care. Major depressive disorder (MDD) is a common and significant health care problem. It is the leading cause of disability among adults in high-income countries and is associated with increased mortality due to suicide and impaired ability to manage other health issues. Depression has a major impact on quality of life for the patient and affects family members, especially children. Depression also imposes a significant economic burden through direct and indirect costs. In the United States, an estimated $22.8 billion was spent on

depression treatment in 2009, and lost productivity cost an additional estimated $23 billion in 2011 (USPSTF, 2015).

The National Committee for Quality Assurance (NCQA) adapted three existing provider and practice level depression care quality measures for potential inclusion in the Healthcare Effectiveness Data and Information Set (HEDIS) using data from electronic clinical data systems. HEDIS measures are mandated for NCQA accredited health plans. The HEDIS Depression Care Measure Set was created to utilize the USPSTF PHQ-9 depression screening tool in order to improve the ability to measure patient outcomes. The HEDIS Depression Care Measure Set uses patient information collected through Electronic Clinical Data Systems (ECDS) such as EHRs, clinical registries and electronic case management records (NCQA, 2016). It monitors the percentage of patients 12 years of age and older that have a diagnosis of major depression who have been administered the PHQ-9 at least once during a four-month period (NCQA, 2016). NCQA plans a phased implementation for the depression measures, beginning with *Utilization of the PHQ-9 to Monitor Depression Symptoms for Adolescents and Adults.* It is important to begin with this measure, which encourages routine monitoring of depression symptoms and will improve the ability to measure patient outcomes. HEDIS is used by over 90% of health care plans in the United States to measure performance and improve quality of care and health services (NCQA, 2015).   HEDIS measures are specifically defined and are used to make comparisons among health plans. Each HEDIS measurement is evolved each year by the National Committee for Quality Assurance (NCQA) in order to ensure that it stays current (NCQA, 2015).

The Relationship between Diabetes and Depression

The relationship between diabetes and depression is complex in nature. As it was stated previously only recent research has revealed that each disease is a risk factor for developing the other. In a study conducted by Chew-Graham (2014), 367 primary care patients with type 1 and 2 diabetes where administered a questionnaire to obtain data on their depressive symptoms, diabetes knowledge, and diabetes self-care. A regression analyses was performed utilizing the severity of depressive symptoms (low, medium, or high) and its impact on adherence to diabetes self-care and oral hypoglycemic regimens, HbA1c and functional impairment (Chew-Graham, 2014). Those patients in medium and high severity tertiles were significantly less adherent to dietary recommendations (Chew-Graham, 2014). Patients in the high-severity tertiles had higher percentages of days in nonadherence to oral hypoglycemic regimens compared to those in the low-severity tertiles (15% vs 7 %); a greater probability of having an emergency department, medical inpatient, mental health, or specialty care cost; and poorer mental and physical functioning (Chew-Graham, 2014). The study concluded that depression in people with diabetes may lead to poorer concordance with medical management, to reduced motivation for self-management activity, greater severity of the physical illness, higher mortality, and higher healthcare costs (Chew-Graham, 2014).

Lin et al. (2010) conducted a longitudinal cohort study of 4,623 primary care patients with type 2 diabetes from 2000 through 2007 to examine the association of depression with risks for advanced macrovascular and microvascular complications including blindness, end-stage renal disease, amputations, and renal failure deaths. The study found that major depression was associated with significantly higher risks of adverse microvascular outcomes hazard ratio 1.36 [95% CI 1.05–1.75] and adverse macrovascular outcomes 1.24 [1.0–1.54] (Lin et al., 2010). Lin

et al. (2010) concluded that depression can impair glycemic control as a direct result of its effects on self-care behaviors such as routine finger sticks to check blood glucose levels, taking medication as prescribed and adherence to diet and exercise regimens. For a long time, diabetic patients who failed to keep up with their healthcare visits or comply with treatment plans were written-off as noncompliant, when in fact they could have possibly been exhibiting signs of depression.

Secondly, the literature points out that diabetic control requires optimal self-care management. Depression can significantly reduce motivation which impacts self-management (Chew-Graham, 2014). Poor outcomes in people with comorbid depression and diabetes may reflect poor self-management. Patients with depression may have feelings of hopelessness (which may influence their judgements about the effectiveness of treatment), may be more likely to be socially isolated and lack support, and may struggle with limited concentration and energy (Chew-Graham, 2014). There are times when the management of one condition conflicts with the management of the other. For example, some antidepressant medications such as tricyclics and selective serotonin reuptake inhibitors (SSRIs) can either cause hyperglycemia or hypoglycemia in diabetic patients (Chew-Graham, 2014).

Thirdly, the literature indicates identification of depression in diabetic patients is essential to gaining control over this health issue. In patients with diabetes, under-detection of comorbid depression is common (Coventry et al., 2011). Coventry et al. (2011) conducted a study to identify and explore barriers to detecting and managing depression in patients with type 1 and 2 diabetes. Qualitative in-depth interviews with 19 primary care healthcare professionals, seven service users and three carers where conducted. They were asked about their awareness of and vulnerability to depression in their patients diagnosed with type 1 and type 2 diabetes;

presentation, detection, and management of depression; communication in the consultation and training as well as development to improve services for depression in type 1 and 2 diabetic patients (Coventry et al., 2011). The study found that barriers to detecting and subsequent management of depression in patients with type 1 and 2 diabetes exist when practitioners minimize signs and symptoms of depression in their patients as being common responses to the losses associated with diabetes; when depression in diabetic patients is normalized by practitioners which prevents recognition and treatment of depression; and when practitioners are uncertain about how to label depression in patients with diabetes in ways that will facilitate understanding and future management (Coventry et al., 2011). The time restraint nature of primary care consultation adds to the barriers of adequate detection as well.

Fourthly, the literature brings to the forefront the issue of diabetes and depression, but still has not created mandatory guidelines in the recognition and treatment of diabetes and depression. Guidelines have been shown to improve when they are created for a single disease but seldom provide specific instruction for the action in the treatment of people with several conditions. This reflects the way in which clinical evidence is created (in randomized controlled trials of a single intervention for a single disease) but does not match everyday practice, where multimorbidity is common (Chew-Graham, 2014). Combining recommendations for patients with multimorbidity can result in burdensome or even harmful treatment regimens. There is a need to develop clinical guidelines that are relevant to a patient with diabetes and depression, rather than to single conditions.

Conceptual Model

The EBP model that was utilized in systematically integrating the new approaches to diabetes and depression is the Grove Model for Implementing Evidence-Based Guidelines in

Practice Framework (Grove & Burns, 2013). This framework involves identifying the practice problem; locating and collecting the most well-founded evidence; and evaluating the quality of the evidence-based guideline (Grove & Burns, 2013). Through this framework evidence-based guidelines with clinical knowledge can be implemented in practice to bring about better patient outcomes (Grove & Burns, 2013). The Grove Model also encourages consistently monitoring outcomes and refining evidence-based guidelines as needed based on current evidence (Grove & Burns, 2013).

The Role for Nursing and Advanced Practice Nursing

Nurses have an essential role in working with people living with diabetes and depression. They are often the first point of care for these individuals. It is of great importance that nurses have an awareness of the signs and symptoms of depression in their diabetic patients. Clinical guidelines to improve health status are driven by a profession's policies regarding evidence-based practices in the delivery of patient care. Although there is a direct link between depression, diabetes, and poorer outcomes for patients with diabetes, there are no clear depression screening policy recommendations for type 1 and type 2 diabetes mellitus patients (LaVance, Fairchild & Rosado, 2015). Nursing organizations are being called upon by the relevant research to come together to determine an evidence-based set of questions to aid in the assessment of patients who struggle with diabetes and perhaps other chronic conditions in which depression has been reported to be a factor that adversely influences patient health outcomes (LaVance, Fairchild & Rosado, 2015). These efforts would be based on current evidence and, thus, should provide the follow-up support needed for type 2 Diabetes Mellitus (T2DM) patients to be better equipped to improve their self-care management (LaVance, Fairchild & Rosado, 2015).

The practice environment of interest was primary or ambulatory care. Ninety percent of patient contacts take place in primary care (Lau et al., 2015). Rapid change in healthcare on a global scale continues to be the drive to implement more clinically and cost-effective interventions to improve care delivery. The need to reduce the delay in translating evidence-based interventions into every day clinical practice, known as the second translational gap, is widely acknowledged (Lau et al., 2015). Almost all changes to practice in primary care involve interventions with multiple interacting components. They include changes in individual clinicians' diagnostic and treatment approaches, in operational systems including information technology, altered divisions of labor between healthcare professionals and organization of care; and require change at multiple levels (Lau et al., 2015).

For instance, the routine screening of diabetic patients for depression may appear simple but on closer inspection, it requires change at multiple levels. At the individual level, the need for education of the health issue of depression among diabetic patients. Organizational structure and culture are important to facilitate change in routinely screening diabetic patients for depression including having adequate resources. It is also widely recognized that the policy context, professional and organizational context, and political economic circumstances impacting on the healthcare environment impact on the design and implementation of complex interventions (Lau et al., 2015).

It is first necessary to identify who the stakeholders and end users are that will be impacted by the change. AHRQ has defined "stakeholders" as persons or groups that have a vested interest in a clinical decision and the evidence that supports that decision (AHRQ, 2014). Stakeholders may be patients, caregivers, clinicians, health plans, researchers, advocacy groups, professional societies, businesses, policymakers, or others (AHRQ, 2014). Each group has a

unique and valuable perspective (AHRQ, 2014). In adequately addressing the stakeholders and end users it is necessary to understand which features of the treatment will make the most difference; which aspects of the illness are of most concern; and how to present the research in a manner that will make it easier to understand and act upon (AHRQ, 2014). To affect better patient outcomes, new knowledge must be transformed into clinically useful forms, effectively implemented across the entire care team within a systems context, and measured in terms of meaningful impact on performance and health outcomes (Stevens, 2013).

Relevance to Nursing Practice

Clinical microsystems are the front-line units that provide most health care to most people (McCluskey & Middleton, 2010). They are the places where patients, families and care teams meet. Central to every clinical microsystem is the patient (McCluskey & Middleton, 2010). Micro systems are the building blocks that form practices (McCluskey & Middleton, 2010). The quality of care can be no better than the quality produced by the small systems that come together to provide care. Evaluation of the EBP project is essential to its utilization in improving patient outcomes. It is necessary to know if the EBP project is meeting its intended goals as well as looking further into areas that need to be modified in order for the project to be successful. The evaluation process is data driven.

Based on the possible results of the EBP project evaluation, the new practice guideline/protocol would be mandatory screening of all diabetic patients in the ambulatory care setting for depression and the subsequent referral to a mental health services for all that have been found to show signs and symptoms of depression in this clinical setting. The new standards of care relevant to the new practice guidelines generated from the EBP project are as follows:

- The mandatory use of the (PHQ-9) which is an easy to use, self-administered, nine question depression screening tool questionnaire (Unutzer & Mijung, 2012).

- Screening for depression every 3-6 months along with HbA1c.

- Educating patients on specific and nonspecific signs and symptoms of depression as well as risk factors for depression.

Summary and Transition

Section two of this project identified the USPSTF recommendation for routine use of the PHQ-9 for screening depression is the primary-care setting; the relationship between diabetes and depression; conceptual model used to guide the project; role of the Advanced Practice Registered Nurse in screening diabetic patients for depression; and the relevance of this project to nursing practice. USPSTF recommends routine use of PHQ-9 to screen all patients for depression in primary-care facilities. Based on the literature, diabetes and depression are risk factors for each other and can worsen symptoms of depression and diabetes. The Grove Model for Implementing Evidence-Based Guidelines in Practice Framework was used to guide the project. Research has called on nursing organizations to come together to develop a set of evidence-based questions to assess patients who struggle with diabetes in which depression has been reported to be a factor that diminishes patient health outcomes. Section three of this project identified the process of collecting the data; sources of evidence; and analysis and synthesis of the data.

Section 3: Collection and Analysis of Evidence

This practice improvement project sought to evaluate the prevalence of depression among patients diagnosed with diabetes through the utilization of USPSTF depression screening tool, PHQ-9. This nine-question patient questionnaire was self-ministered (Appendix A). After the

patient filled out the questions, the clinician verbally verified all responses. After the baseline

assessment was established the patient filled out the questionnaire again at subsequent visits to

compare results. With such a large part of the U.S. population diagnosed with diabetes, it's true

prevalence of depression among this population is unknown. The purpose of this quality

improvement study was to introduce a validated screening tool for depression into the advanced

nursing practice in caring for patients with both newly diagnosed and on-going diabetes

management. The use of a routine screening tool may increase the rate of diagnosis and

treatment of depression, contributing to improved self-management and diabetic control.

Practice-Focused Question

The practice-focused question was "What is the prevalence of depression among adult

patients diagnosed with diabetes?" Out of the question arose a secondary question: "Is

depression underdiagnosed in diabetic patients in a specific primary care setting?" The target

population was primary care adult patients with a diagnosis of diabetes mellitus type 1 and 2.

The tool USPSTF PHQ-9 was used to screen and monitor for depression in the population. This

screening tool was used to initially establish a baseline in each patient within the target

population. The long-term plan, which is outside the scope of this study, is that the tool will be

used subsequently at every 3-month visit to monitor and compare to baseline results. Patients

diagnosed with depression will be documented and monitored through their electronic health

record.

Sources of Evidence

I, the clinician, who is the doctoral student nurse practitioner employed full time by the

clinic, reviewed the charts of diabetic patients over 21 years of age that were seen in the clinic

during a 6-week period. Patients with a recent or existing diagnosis of diabetes mellitus type 1

and 2 had the screening tool attached to the chart by the medical assistant (MA) for the patient to complete in the examination room while waiting to be seen by the clinician. The nine questions in the PHQ-9 corresponded directly to the nine criteria used to diagnose major depressive disorder in the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV)*. The nine questions assess the following symptoms:

Over the *last 2 weeks,* how often have you been bothered by any of the following problems?

a. Little interest or pleasure in doing things

b. Feeling down, depressed, or hopeless

c. Trouble falling/staying asleep, sleeping too much

d. Feeling tired or having little energy

e. Poor appetite or overeating

f. Feeling bad about yourself or that you are a failure or have let yourself or your family down

g. Trouble concentrating on things, such as reading the newspaper or watching television.

h. Moving or speaking so slowly that other people could have noticed. Or the opposite; being so fidgety or restless that you have been moving around a lot more than usual.

i. Thoughts that you would be better off dead or of hurting yourself in some way (Cameron et al., 2008).

Each of the nine areas are rated from 0-3, with three being the most frequent and severe amount of times that the depressive symptoms are experienced (Cameron et al., 2008). The score is

added up and can range from 0-27 (Cameron et al., 2008). A score of zero indicates no depression. A score of 1-4 would signify minimal depression and a score of 5-27 would denote mild to severe levels of depression.

I reviewed the findings with the patient and noted the score on the EMR and whether additional diagnosis and treatment was recommended. I reviewed the results of the diabetic patients and used descriptive statistics to note those whose scores were five or above, denoting moderate to severe depression. Those patients whose score were five or above were directly referred to mental health services within the clinic with their consent. Since this was an additional diagnostic tool used for all diabetic patients, informed consent was not necessary. All data used for analysis was coded and kept in a locked, secure office. The data was added to the EMR, which is secured and all applicable HIPAA measures were followed in the practice.

Analysis and Synthesis

The PHQ-9 score was measured using the HEDIS Depression Care Measures Set. The data generated using this measure will be utilized to inform practice. Descriptive statistics was used to describe the sample and determine the frequency of scores throughout the sample of patients. Ranges of scores and percentages were computed. To show clinical significance a power analysis was conducted and concluded that a sample population of 190 diabetic patients would render a power of 0.80 and a 5% type I error rate (Power and Sample Size, 2013).

Summary and Transition

Depression impacts the mental and physical health of many people living with diabetes. It is the second leading cause of disability worldwide (NCQA, 2016). This DNP project will help generate more evidence to support the initiative to regularly screen for, diagnose, and treat

depression among diabetic patients as well as measure the quality of care that they receive. The use of patient reported outcome measures helps to understand depression outcomes so that the disease can be better treated and monitored. This project will bring awareness to the importance of identification and treatment of depression in diabetic patients so that they can have less depressive symptoms and obtain better management of their chronic illness. Section four of this project identified the findings and recommendation; as well as the strengths and weaknesses of the project.

Section 4: Findings and Recommendations

Introduction

The goal of this project was to introduce a validated depression screening tool into advanced nursing practice in caring for patients with both newly diagnosed and ongoing diabetes management. It was expected that the use of a routine screening tool would increase the rate of diagnosis and treatment of depression, ultimately contributing to improved self-management and thus diabetic control (Bogner et al., 2012).

Findings and Implications

According to a power analysis, a sample population of 190 diabetic patients was needed to show clinical significance in the study. After careful review of all patient charts, only 135 patients met the criteria, which was 21 years or older, with a recent or existing diagnosis of diabetes mellitus type 1 or 2. The sample was 55 participants short because the clinic had only 135 active adult diabetic patients on its roster. Since the study was conducted at this one primary-care location, there was no other patient population available to generate the additional 55 participants needed for clinical significance. Each of the 135 diabetic patients was screened once for depression using the PHQ-9 over a six-week period. *Table 1* and *Figure 1* show the

frequency distribution of all the PHQ-9 depression scores from the sample of the 135 diabetic

patients, categorized by severity.

Table 1
PHQ-9 Scores Frequency Distribution

Depression Severity	Frequency
0-4 (Minimal or none)	48
5-9 (Mild)	30
10-14 (Moderate)	12
15-19 (Moderately Severe)	23
20-27 (Severe)	21

FIGURE 1
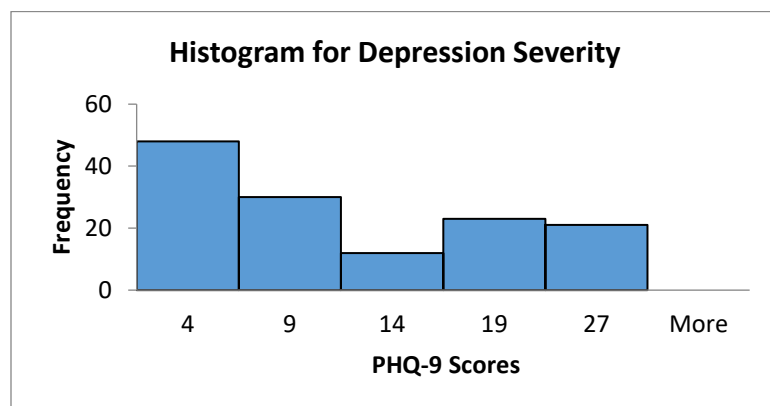
As represented in the frequency distribution *Table 1* and histogram, 48 of the 135 patients

screened for depression fell within the minimal or none category with scores ranging from 0-4.

30 of the 135 patients fell within the mild category with scores ranging from 5-9. 12 of the 135

patients fell within the moderate category with scores ranging from 10-14. 23 of the 135 patients

fell within the moderately-severe category with scores ranging from 15-19. 21 patients of the

135 fell within the severe category with scores ranging from 20-27. When considering the PHQ-

9 criteria for a positive screen for depression, which is a score of five or higher; it becomes

evident that the combined totals of the frequency of scores 5 – 27 shows that more than half of

the diabetic patients screened have mild to severe depression. When we look further into the

demographic breakdown of this group of diabetic patients that screened positive for mild to

severe depression; as represented in *Table 2*; it is evident that more females than males had a

positive screen for depression. The mean ages of the diabetic patient's positive for mild to

severe depression range from 27-53 for males and 41-55 for females, which indicates that more

older females than males had a positive screen for depression. These findings are indicative of

the underdiagnosing of depression among diabetic patients in the primary care setting.

Table 2
Demographics of PHQ-9 Depression Screening Participants

Depression Severity	Male	Female	Mean Age of Males	Mean Age of Females
0-4 (minimal/none)	25	23	53	55
5-9 (Mild)	12	18	49	47
10-14 (Moderate)	3	9	27	42
15-19 (Mod. Severe)	9	13	46	52
20-27 (Severe)	4	18	43	41

Recommendations

Based on the results of this project, new practice guidelines for this clinic are

recommended:

- The mandatory use of the PHQ-9 depression screening tool along with HbA1c for all

  diabetic patients every 3-6 months.

- Educating diabetic patients on the specific and nonspecific signs and symptoms of

  depression, as well as risk factors for depression.

- Maintenance of an HbA1c of <7% and greater blood pressure and lipid control.

- Screening for all adolescent diabetic patients ages 12 – 20 years of age.

- Mandatory training of all current and new health care providers staffed within the clinic

  on signs and symptoms of depression and current treatments.

Recommendations for future research would include:

- Further examination of the relationship between diabetes and depression.

- Testing whether or not improvements in depression among diabetic patients improves self-care management, adherence to medication management and improved HbA1c values.

- Looking at the improvement of depression among diabetics with the utilization of cognitive behavioral therapy (CBT) alone as opposed to the use of CBT and antidepressant.

Strengths and Limitations

One of strengths of this project is the robust literature review that identified the need for further research on the prevalence of depression and diabetes in the primary care setting. Another strength is that this study aids in providing evidential support to the routine screening of diabetic patients for depression in the primary care setting through the utilization the PHQ-9 depression screening tool. The findings in this project further demonstrate the reliability and validity of the PHQ-9 depression screening tool as seen in previous studies within the current literature (Cameron et al., 2008; Hankerson et al., 2015; Landis et al., 2013; Chin et al., 2016; USPSTF, 2015).

There were some limitations noted in this study as well. The first limitation was the sample size. As a result of the patient charts reviewed only 135 patients met the criteria for inclusion into the study, even though the power analysis concluded 190 patients would be necessary to show clinical significance. Another limitation is that the study did not take into consideration the literacy level of the diabetic patients that participated in the study. It was found during review of patient response to the PHQ-9 that a few of the patients screened did not

understand some of the words used in the PHQ-9, such as the term, pleasure, and further explanation and or definitions of some other words as well had to be given by the clinician.

Summary and Transition

The findings and recommendations within section four will help in the development of a depression screening guideline for all diabetic patients within this primary-care clinic, which will provide better care for this patient population. The development of this project and its findings has enhanced the understand of the clinical staff on the relationship of diabetes and depression. These findings will help to expand the screening of depression to all patient with chronic disease. Section five identified the dissemination plan for the findings of this project the professional growth of the clinician.

Section 5: Dissemination Plan

The internal plan to disseminate the findings of the project is to present the findings to the medical director of this private practice, with recommendations to expand the use of the PHQ-9 depression screening tool to all patients; especially those who have been diagnosed with a chronic disease. The start date for the implementation of such screenings would be effective immediately. The external plan of dissemination would be to present these findings to other health care providers in primary care either in a conference setting or through a social media outlet such as Facebook, which has pages specifically for primary care providers with a discussion board. Routine screening for depression among diabetic patients is essential in order for this health issue to be address. One of the major obstacles to overcoming this issue is the lack of screenings being conducted by health care providers in the primary care setting. The reasons for this project and its study findings are primarily to educated and encourages health care providers to screen their diabetic patients for depression and to then refer those who are

exhibiting depressive behavior to appropriate mental health specialists. If the plan is followed

correctly it would help many diabetic patients get the necessary mental health services, they need

which would subsequently benefit their medical health. It would be unethical to not address this

issue.

As a Family Nurse Practitioner, I would want the results of my diabetes and depression

program published in the Journal for Nurse Practitioners. This journal is an official, scholarly,

peer-reviewed journal of the American Association of Nurse Practitioners and it offers timely

and original articles addressing clinical practice, clinical management, health policy, research,

education, and other issues affecting NPs and other primary, acute and/or long-term health care

providers. Another venue would be the American Diabetes Association Journal. The American

Diabetes Association Journal continues to be the authoritative source for the latest in diabetes

research.

Analysis of Self

I have identified three significant areas of growth related to my professional contribution and

or leadership and they are as follows:

- Clinical scholarship and analytical methods for evidence-based practice.

- Health care policy for advocacy in health care.

- Clinical prevention and population health for improving the Nation's health.

According to the American Association of Colleges of Nursing (2006), "scholarship and research

are the hallmarks of doctoral education" (p. 11). Before starting this program, I did not

appreciate research as much. It wasn't until starting this program that I came to understand that

scholarship and research is the foundation of nursing practice. It is what separates nursing from

other professions. As a DNP we are responsible for the translation of research into practice and the dissemination and integration of new knowledge (AACN, 2006). According to the AACN (2006), "health care policy creates a framework that can facilitate or impede the delivery of health care services or the ability of the provider to engage in practice to address health care needs" (p. 13). As a result of the training received through this DNP program I feel more confident in the role of policy maker, and I am looking forward to helping create policy that will benefit the underserved and often overlooked population in this country. Clinical prevention is defined as health promotion and risk reduction/illness prevention for individuals and families (AACN, 2006). This program has help increase my knowledge and ability to analyze epidemiological, environmental and scientific data related to population health. Understanding how to implement prevention and population health activities is necessary in order to impact the goal of improving individual's health status globally.

Summary

Diabetes is an epidemic throughout the world. There must be global efforts to ultimately create standardized modules of treatment that will address both diabetes and the mental health issues that accompany this disease. More primary care organizations will need to incorporate leadership, creativity and top professionals in mental health and diabetes care to help insure that this goal is reached. Individuals with diabetes and depression will become empowered through gaining knowledge and expertise in the management of their condition.

References

American Association of Colleges of Nursing (2006). The essential of doctoral education for

advanced nursing practice. Retrieved from:

http://www.aacn.nche.edu/dnp/Essentials.pdf

Agency for Healthcare Research and Quality (2014). Effective health care program stakeholder

guide 2014. *The Agency for Healthcare Research and Quality.* Retrieved from

http://www.ahrq.gov/sites/default/files/wysiwyg/research/findings/evidence-based-

reports/stakeholderguide/stakeholdr.pdf

Arokiasamy, P., Uttamacharya, U., Jain, K., Biritwum, R.B., Yawson, A.E., Wu, F. & Kowal, P.

(2015). The impact of multimorbidity on adult physical and mental health in low- and

middle-income countries: what does the study on global ageing and adult health (SAGE)

reveal? *BMC Medicine, 13*(178), 1-16.

Bernard, K., Peveler, R.C. & Holt, R. (2013). Antidepressant medication as a risk factor for type

2 diabetes and impaired glucose regulation. *Diabetes Care, 36*, 3337-3345.

Bogner, H.R., Morales, K.H., de Vries, H.F. & Cappola, A.R. (2012). Integrated management of

type 2 diabetes mellitus and depression treatment to improve medication adherence: A

randomize controlled trial. *Annuals of Family Medicine, 10*(1), 15-22.

Cameron, I.M., Crawford, J.R., Lawton, K. & Reid, I.C. (2008). Psychometric comparison of

PHQ-9 and HADS foe measuring depression severity in primary care. *British Journal of

General Practice, 58*, 32-36.

Centers for Disease Control and Prevention (2013). Depression. Retrieved from

    http://www.cdc.gov/mentalhealth/basics/mental-illness/depression.htm

Centers for Disease Control and Prevention (2014). 2014 National diabetes statistics report.

    Retrieved from http://www.cdc.gov/diabetes/data/statistics/2014statisticsreport.html

Centers for Disease Control and Prevention (2017). 2017 National diabetes statistics report.

    Retrieved from http://www.diabetes.org/assets/pdfs/basics/cdc-statistics-report-2017.pdf

Chew-Graham, C. (2014). Diabetes and depression in general practice: Meeting the challenge of

    managing comorbidity. *The British Journal of General Practice, 64*, 386-367.

Chin, W.Y., Yuk Fai Wan, E., Pui Hang Choi, E., Tsui Yan Chan, K & Lo Kuen Lam, C. (2016).

    The 12-month incidence and predictors of PHQ-9 screened depressive symptoms in

    Chinese primary care patients. *Annals Family Medicine, 14*, 47-53.

Coventry, P.A., Hays, R., Dickens, C., Bundy, C., Chew-Graham, C. (2011). Talking about

    depression: A qualitative study of barriers to managing depression in people with long

    term conditions in primary care. *BMC Family Practice, 12*(1), 1-19.

Cummings, D.M., Kirian, K., Howard, G., Howard, V., Yuan, Y. & Stafford, M. (2016).

    Consequences of comorbidity of elevated stress and/or depressive symptoms and incident

    cardiovascular outcomes in diabetes: Results from the Reasons for Geographic and

    Racial Differences in Stroke (REGARDS) Study Diabetes Care. *Diabetes Care, 39,*

    101-109.

Donnelly, P. & Kirk, S.P. (2015). How to use the PDSA model for effective change

    management. *Education for Primary Care, 26,* 279-281.

Grove, S. K., Burns, N., & Gray, J. R. (2013). *The practice of nursing research: Appraisal, synthesis, and generation of evidence* (7th ed.). St. Louis, MO: Saunders Elsevier.

Hankerson, S.H., Lee, Y.A., Brawley, D.K., Braswell, K. & Weissman, M.M. (2015). Screening for depression in African-American Churches. *American Journal of Preventative Medicine, 49*, 526-533.

Joint Commission on Quality and Safety (2014). Microsystems in health care. *Joint Commission on Quality and Safety.* http://clinicalmicrosystem.org/wp-content/uploads/2014/05/JQIPart8.pdf

Kimbro, L., Mangione, C.M., Steers, W.N., Duru, O.K., McEwen, L. & Ettner, S. (2014). Depression and all-cause mortality in persons with diabetes mellitus: Are older adults at higher risk? Results from the Translating Research into Action for Diabetes Study. *Journal of the American Geriatric Society, 62*, 1017-1022.

Landis, S.E., Barrett, M.L. & Galvin, S.L. (2013). Effects of different models of integrated collaborative care in a family medicine residency program. *American Psychology Association, 31*(3), 264-273.

Lau, R., Stevenson, F., Ong, B.N., Dziedzic, K., Peacock, R. & Murry, E. (2015). Achieving change in primary care-effectiveness of strategies for improving implementation of complex interventions: Systematic review of reviews. *The British Medical Journal, 5*(12), 1-17

LaVance, M.S., Fairchild, R. & Rosado, R.J. (2015). Turning the table: Depression screening as the 6th vital sign. *The Journal of Nurse Practitioners, 11*(2), 199-206.

Lin, E., Rutter, C.M., Katon, W., Heckbert, S.R., Ciechanowski, P. & Von Korff, M. (2010). Depression and advanced complications of diabetes. *Diabetes Care, 33*(2), 264-269.

McCluskey, A., & Middleton, S. (2010). Delivering an evidence-based outdoor journey intervention to people with stroke: Barriers and enablers experienced by community rehabilitation teams. *BMC Health Services Research, 10*(18), 1–15.

National Committee for Quality Assurance (2015). Proposed changes to existing measure for HEDIS: Comprehensive diabetes care. *National Committee for Quality Assurance.*

National Committee for Quality Assurance (2016). HEDIS depression measures specified for electronic clinical data systems. *National Committee for Quality Assurance.* Retrieved from http://www.ncqa.org/hedis-quality-measurement/hedis-learning-collaborative/hedis-depression-measures

National Institute of Mental Health (2011). Depression and Diabetes. Retrieved from http://www.nimh.nih.gov/health/publications/depression-and-diabetes/index.shtml

Power and Sample Size. Com (2013). Calculate sample size needed. *Power and Sample Size .Com.* Retrieved from http://powerandsamplesize.com/Calculators/Test-1-Proportion/1-Sample-1-Sided

Ridenour, N., & Trautman, D. (2009). A primer for nurses on advancing health reform policy. *Journal of Professional Nursing, 25*(6), 358-362.

Stevens, K. (2013). The impact of evidence-based practice in nursing and the next big idea. *The Online Journal of Issues in Nursing, 18*(2), Manuscript 4.

The National Committee for Quality Assurance (2015). HEDIS depression measures specified

     for electronic clinical data systems. Retrieved from

     http://www.ncqa.org/HEDISQualityMeasurement/HEDISLearningCollaborative/HEDIS

     DepressionMeasures.aspx#sthash.rPSoywJA.dpuf

The National Diabetes Education Program (2015). Transform practices to improve care.

     Retrieved from transformation/improve-practice-quality/transform-practices.aspx

The W. Edwards Deming Institute (2016). The PDSA cycle. Retrieved from

     https://www.deming.org/theman/theories/pdsacycle

United States Preventative Services Task Force (2015). Depression in adults: Screening.

     Retrieved from http://www.uspreventiveservicestaskforce.org/Page/Document/draft-

     recommendation-statement115/depression-in-adults-screening1

Unutzer, J. & Mijung, P. (2012). Strategies to improve the management of depression in primary

     care. *Primary Care, 39*(2), 415-431.

White, K. M., & Dudley-Brown, S. (2012). *Translation of evidence into nursing and health care*

     practice. New York, NY: Springer.

Winkley, K. (2013). Depression and diabetes: What should nurses do? *Nursing Times, 109*(45),

     20-22.

World Federation for Mental Health (2015). Diabetes and depression: Why treating depression

     and maintaining positive mental health matters when you have diabetes.

Appendix A: Patient Health Questionnaire (PHQ-9)

Patient Name: _____   **Date:** _____

	Not at all	Several days	More than half the days	Nearly every day
1. Over the *last 2 weeks,* how often have you been bothered by any of the following problems?				
j. Little interest or pleasure in doing things	☐	☐	☐	☐
k. Feeling down, depressed, or hopeless	☐	☐	☐	☐
l. Trouble falling/staying asleep, sleeping too much	☐	☐	☐	☐
m. Feeling tired or having little energy	☐	☐	☐	☐
n. Poor appetite or overeating	☐	☐	☐	☐
o. Feeling bad about yourself or that you are a failure or have let yourself or your family down	☐	☐	☐	☐
p. Trouble concentrating on things, such as reading the newspaper or watching television.	☐	☐	☐	☐
q. Moving or speaking so slowly that other people could have noticed. Or the opposite; being so fidgety or restless that you have been moving around a lot more than usual.	☐	☐	☐	☐
r. Thoughts that you would be better off dead or of hurting yourself in some way.	☐	☐	☐	☐

	Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
2. If you checked off any problem on this questionnaire so far, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?	☐	☐	☐	☐

Scoring:

Count the number (#) of boxes checked in a column. Multiply that number by the value indicated below, then add the subtotal to produce a total score. The possible range is 0-27. Use the table below to interpret the PHQ-9 score.

Not at all	(#) _____	x 0 = _____
Several days	(#) _____	x 1 = _____
More than half the days	(#) _____	x 2 = _____
Nearly every day	(#) _____	x 3 = _____

Total score: _____

Interpreting PHQ-9 Scores		**Actions Based on PH9 Score**	
		Score	**Action**
Minimal depression	0-4	< 4	The score suggests the patient may not need depression treatment
Mild depression	5-9		
Moderate depression	10-14	> 5 - 14	Physician uses clinical judgment about treatment, based on patient's duration of symptoms and functional impairment
Moderately severe depression	15-19		
Severe depression	20-27		
		> 15	Warrants treatment for depression, using antidepressant, psychotherapy and/or a combination of treatment.