Depression Screening and Management in a Free Primary Care Clinic

A Project Presented to the Faculty of Keigwin School of Nursing

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by

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Abstract

Introduction. Depression diagnoses in the United States continue to rise within the primary care setting. At a free primary care clinic in the Southeastern United States, the PHQ-9 screening tool was being used to screen patients for depression, but providers were not regularly addressing positive screenings.

Aims. This quality improvement project aimed to evaluate health care staffs' awareness, attitudes and confidence towards depression screening and management and implement best practices in primary care identification and follow up for depression.

Methods. Health care staff at a primary care clinic responded to Revised Depression Attitudes Questionnaire (RDAQ) pre-and post-surveys to measure their awareness, attitudes, and confidence regarding depression. In addition, data were collected on Patient Health Questionnaire-9screenings, depression diagnosis and treatment plans to measure depression screening and follow-up. Data was evaluated in four-week cycles according to Plan-Do-Study-Act model.

Results. Participant surveys indicated optimism toward depression screening and management but a lacked confidence in their clinical management of depression. After implementation, PHQ-9 screening remained steady across the three PDSA cycles with 83%, 75%, and 89% of primary care patients being screened. Both a depression diagnosis and treatment plan were documented for 60% (cycle 1), 28.5% (cycle 2), and 31% (cycle 3) of PHQ-9s with scores five or greater. Eight patients had both a baseline and follow-up PHQ-9 score with six of their scores improving by at least one point.

Conclusions. Implementation of an evidence-based depression screening and management protocol in the primary care setting can support clinical care and follow-up.

Keywords: *Depression, Quality Improvement, Patient Health Questionnaire, Primary Health Care*

Background and Significance

Major depressive disorder (MDD), also known as depression and clinical depression, is a common and serious mood disorder. Symptoms of depression can severely affect the way a person feels, thinks and carries out daily activities of living such as eating, bathing and working (Thase, 2019). Depression has become the leading cause of disability worldwide and accounts for 8.3% of all years lived with disability in the United States (Ferenchick, Ramanuj, & Pincus, 2019). People suffering from depression miss work twice as much as those without depression because of its negative effects on physical health (Ferenchick et al., 2019). Morbidity and mortality are increased with depression due to its bidirectional relationship with co-morbidities. Chronic conditions such as hypertension, diabetes, and end stage renal disease tend to be worse in the presence of depression (Ferenchick et al., 2019). Depression is also the leading cause for suicide (Thase, 2019). Up to 10% of patients diagnosed with depression attempt suicide (McConnell, Carter, & Patterson, 2019). The diagnosis of depression has steadily increased in the United States, which has led to an increase in prescriptions for antidepressant medications (Thase, 2019). Sustainable and equitable mental health programming is even more important during the COVID-19 pandemic (Moreno et al, 2020). Implementing best practices for identifying and treating depression in primary care are therefore important for the safety of both patients and health care staff (Quidley-Rodriguez & de Tantillo, 2020). Patients with depression are more likely to be diagnosed and treated by a primary care provider than a psychiatrist (Thase, 2019). In the United States, there are more than 8 million doctor visits for depression each year and more than half are in primary care (Ferenchick, Ramanuj, & Pincus, 2019). To promote good patient outcomes health care workers who manage depression should be knowledgeable in the screening, diagnosis and management of MDD.

Uninsured Patients in America

Despite the passing of the Affordable Care Act (ACA) in 2010, many people in America still lack healthcare insurance. Initially, uninsured nonelderly Americans decreased from 46.5 million in 2010 to just below 27 million in 2016. However, since that historic low in 2016 1.2 million people have become uninsured. In 2018, 45% of people stated their main reason for being uninsured is the high cost of coverage. The ACA provided subsidies for insurance premiums for household earnings between 138% and 400% of the poverty level, but the premiums are often still unaffordable (Tolbert, Orgera, & Damico, 2019). The ACA also allowed for Medicaid expansion, which would qualify adults at or below 138% of the poverty line. However, in 2012 the Supreme Court continued the ACA but not Medicaid expansion. Individual states would decide to participate in Medicaid expansion. The states that chose not to participate continued the pre-ACA eligibility criteria, only including people with disabilities, low-income children and pregnant women, and very low-income parents (Norris, 2018). Florida is one of the 17 states that has not expanded Medicaid. In 2017, 2.7 million adults under the age of 65 were uninsured in Florida (Nuzum, Coleman, & McIntosh, 2019). The ‘gap’ in coverage affects low-income adults without children or disabilities, undocumented immigrants, and those whose jobs do not provide coverage. People without insurance lack access to healthcare due to healthcare cost and may avoid seeking care (Tolbert et al., 2019). This leads to acute and chronic health conditions, like MDD, frequently going untreated.

Chronic Conditions and Behavioral Health Among Uninsured Americans

Frequently those in the coverage gap seek care from free health clinics that are located within their community. Since 1960, The National Association of Free & Charitable Clinics (NAFCC) has established approximately 1,400 free clinics across the nation. Free and charitable

clinics provide a range of health care services that include medical, behavioral health, dental, vision, and specialty referrals to the uninsured population. The staffing is largely supplied by volunteer providers, community members, and students. Funding from the state and federal government is limited, and the clinics rely heavily on private donations. Despite these limitations they are held to the same standard of care of other health organizations and must have a quality assurance process in place. The quality assurance process ensures uninsured patients receive high quality care and their healthcare outcomes are meeting national benchmarks (NAFCC, 2016).

As mentioned before, mental health conditions are more likely to be diagnosed and managed in the primary care setting. Mental health conditions, such as depression, often accompany chronic conditions such as diabetes, heart disease, cancer, chronic lung disease, and arthritis. Approximately 90% of Medicare claims for depression were accompanied by another chronic medical condition (Gallo et al., 2015). Depression and anxiety often lead to disability and has been found to cause the same number of years lived with disability (YLD) as heart disease, strokes, Alzheimer disease, chronic kidney disease, chronic obstructive pulmonary disease, and diabetes combined (Kroenke & Unutzer, 2017).

Studies have shown that even though patients may be screened for depression and anxiety, the condition is not always diagnosed nor is it addressed in the primary care setting (Olfson, Blanco, & Marcus, 2016). However, treating patient's mental health is imperative when it comes to treating and self-management of their other chronic diseases. A depressed and anxious patient is less likely to engage actively in care. For example, depression may hinder a hypertensive patient from wanting to exercise and eat healthy and anxiety may worsen the hypertension (Sherman, Miller, Keuler, Trump, & Mandrich, 2017). Barriers to addressing

mental health conditions in the primary care setting include brief visits, provider deficits in mental health training, inadequate reimbursement, and other conditions that warrant precedence. Vulnerable populations such as the elderly, women, minorities and low-income benefit most from collaborative care models that have primary and mental health specialists working together (Kroenke & Unutzer, 2017).

Free and charitable health clinics remain an essential part in America's health system, providing care for low-income adults who have undiagnosed and untreated mental health disorders. Quality improvement initiatives can help ensure that these free clinics continue to provide high quality mental health care to this underserved population despite barriers to screening and management of depression.

Concept Definitions

Major Depressive Disorder (MDD)

MDD can be diagnosed by following the DSM-5 criteria. A person must have five or more of the following symptoms for at least two weeks and these symptoms signify a change in the person's previous functioning. One of the symptoms must also be either a depressed mood or a loss of interest or pleasure (Sadock, Sadock, & Ruiz, 2015).

1. Depressed mood*
2. Diminished interest or pleasure in activities*
3. Significant weight changes
4. Insomnia or hyperinsominia
5. Psychomotor agitation or retardation
6. Fatigue or loss of energy
7. Feelings of worthlessness or inappropriate guilt

8. Diminished ability to think, concentrate, or indecisiveness
9. Recurrent thoughts of death.

The two most important symptoms in MDD are depressed mood and loss of interest or pleasure (Sadock, Sadock, & Ruiz, 2015).

It is critical that patients who are experiencing another mental health condition, such as bipolar disorder, not be misdiagnosed with depression. Bipolar patients can also have depressed episodes, but the key difference is that bipolar patients will have manic episodes as well. The correct diagnosis is imperative because unipolar and bipolar disorders are treated differently. In addition, conditions that mimic or that may predispose a person to depression must also be ruled out such as hypothyroidism, alcoholism, and drug abuse (Sadock, Sadock, & Ruiz, 2015).

Patient Health Questionaire-9 (PHQ-9)

The PHQ-9 is a nine-item depression scale that guides providers with screening, diagnosing, monitoring and measuring the severity of depressive disorders. It is an appealing tool in the primary care setting because it is practical, valid, and specific (Kroenke & Spitzer, 2002). The nine questions assist the provider in identifying if the patient is experiencing the DSM-criteria for depression in the last two weeks: mood, sleep, energy, appetite, attention, behavior, and suicidal ideations. The frequency in which the patient is experiencing these symptoms is then rated by the patient as zero (never), one (several days), two (more than half the days) to three (nearly every day). Each column total is then summed to obtain the final score. The overall score for the PHQ-9 ranges from zero to 27. A score of zero to four is indicative that the patient does not meet the criteria of true depression. Scores five, 10, 15, and 20 are indicative of mild, moderate, moderately severe, and severe depression respectively (Kroenke, Spitzer, & Williams, 2001).

Free and Charitable Health Clinics

Health care institutions that deliver and restrict their medical, dental, pharmacy, vision and/or mental health services to low-income individuals and families who are either under or uninsured. These clinics are 501(c)(3) tax-exempt organizations or operate as a program component or affiliate of a 501(c)(3) organization (NAFCC, 2016). They are still considered to be Free or Charitable Clinics so long as they provide essential services to patients no matter the patients' capability to pay (NAFCC, 2016).

Quality Improvement (QI)

QI is a systematic, official methodology to investigate the practice performance and efforts in a health organization to improve performance. A range of QI models exist to help collect and analyze data and test a change. Quality improvement models provide a systematic and formal framework to establish a QI process in practice. An example of a QI model is the Model for Improvement (Plan-Do-Study-Act cycles) developed by the Institute for Healthcare Improvement, which produces a series of cycles to test interventions on a small scale. The QI process is built on six basic concepts: 1) Establish a culture of quality in practice, 2) determine and prioritize potential areas for improvement, 3) collect and analyze data, 4) communicate results to fellow staff and patients, 5) pledge to continuing evaluation, and 6) disseminate achievements to other facilities to help benefit all patients and health care institutions (Basics, 2020).

Problem Statement and Purpose

According to the most recent data from 2017, Florida ranks second in terms of the number of uninsured adults (18%) affected by the coverage gap (Garfield, Orgera, & Damico, 2019). A free and charitable clinic in a large southeastern city serves the uninsured, homeless,

and immigrant adult population by providing preventative primary care, acute health care, and referral services. The Florida Association of Free and Charitable Clinics (FAFCC) and a local hospital provide funding for the clinic. In order to continue receiving this aid the clinic must supply quality assurance reports on hypertension, hyperlipidemia, diabetes, and depression. HealthyPeople.gov has set a national benchmark to have 75.9% of adults 18 years and older with depression to also receive treatment in 2020 (ODPHP, 2020). The benchmark for depression diagnosis is to have only 5.9% of adults with an MDD diagnosis (ODPHP, 2020). In order to assist in achieving these benchmarks, they have also set a goal to increase the proportion of primary care clinics that offer mental health treatment either on site or by referral from 79% to 87% in 2020 (ODPHP, 2020).

To reach these benchmarks the clinic had implemented the PHQ-9 as a screening tool for depression. However, the clinic lacked a set protocol for documenting and communicating the PHQ-9 score to the provider, as well as an evidence-based process for managing and following-up on a depression diagnosis. In order to track the management of depression the providers must document a depression diagnosis in the electronic medical record, and a follow-up plan in the patient's chart. The local hospital that has partnered with the free clinic supplies grant funding and is requesting the clinic report the PHQ-9 scores of all patients diagnosed with depression. The hospital partner also wanted to see that PHQ-9 scores were improving by at least one point (N. Crain, Personal communication, Jan 28th, 2020). The purpose of this project was to evaluate health care providers' awareness, attitudes, and confidence in managing depression before and after they complete a depression education course and to establish preliminary data on depression screening, diagnosis, and management and PHQ-9 scores at this free primary care clinic.

Project Objectives

1. To evaluate the health care providers awareness, attitudes, and confidence in depression management using the R-DAQ survey before and after the implementation of a depression education course and depression management protocol over a three-month time frame.
2. To establish preliminary data on depression screening, diagnosis and treatment in this free primary clinic using the PHQ-9 scale and provider documentation over a three-month time frame.

Clinical Question

Does the implementation of a depression education course and protocol for depression screening and management in a small, free, primary care clinic improve the rate of depression screening and follow-up management of adults, aged 18 and older?

Review of Literature

Free and charitable clinics provide a wide variety of services, including mental health services, but due to limited funding and resources the clinics each have their own unique challenges to serving the uninsured population. Current federal recommendations were reviewed to evaluate how they have been incorporated into primary care settings. Because this free clinic is held to the same standard of care as other for-profit organizations, depression management was evaluated from a variety of settings and not just free clinics.

U.S. Preventative Services Task Force (USPSTF)

The most recent USPSTF recommendation from January 2016 “recommends screening for depression in the general adult population, so long as there are adequate systems in place to ensure accurate diagnosis, effective treatment, and appropriate follow-up.” (USPSTF, 2016, para

1). The USPSTF graded this recommendation a “B”, which indicates that it should be offered, and the net benefit outweighs the risk of harm. Ideal screening intervals cannot be recommended at this time and should be based on providers discretion and patient’s risk factors for depression. Patients most at risk for depression include women, young and middle-aged adults, nonwhite persons, undereducated, previously married, unemployed, chronic illnesses, other mental health disorders (including substance misuse), or a family history of psychiatric disorders. Antidepressants or psychotherapy alone or combined, along with collaborative care, are determined to be efficient treatments of depression (USPSTF, 2016). These screening and treatment recommendations are further endorsed by the American Academy of Family Physicians (Maurer, Raymond, & Davis, 2018), Agency for Healthcare Research and Quality (AHRQ) (2016), Institute for Clinical Systems Improvement (Trangle et al, 2016), and Up to Date (Williams & Nieuwsma, 2019).

Search Process

The search process was conducted using the databases CINAHL, PubMed, and Google Scholar. Keywords and phrases used were *attitudes, confidence, DAQ, R-DAQ, providers, nurses, nurse practitioner, primary care, PHQ-9 depression scales, depression, low-income, poverty, low socioeconomic status, hypertension, diabetes, chronic conditions,* and *asthma*. The inclusion criteria consisted of articles that were written in English, peer-reviewed, full text availability, participants 18 years of age and above and published within the last five years unless the article is a source of original research. The exclusion criteria included pregnant participants, post-partum depression, and PHQ-9s delivered in a language other than English. Pregnant participants and post-partum depression were excluded because neither are managed at this clinic.

The search process resulted in 453 articles. The articles were then evaluated for inclusion and exclusion criteria, which resulted in 117 articles. Articles were first selected based on reviews of titles and abstracts, which resulted in 30 articles. Upon further analysis, the articles were organized into a matrix and a total of 27 articles were included in the review. The matrix assisted in the process of identifying five major themes found in the articles which included provider awareness, attitudes and confidence, validity of the PHQ-9 scale, depression screening in primary care, chronic conditions and depression, and low-income and depression. The articles selected are supplemental evidence for this integrative literature review that supports the assumption that when providers are both knowledgeable and confident, screening for depression in the primary care setting with the PHQ-9 will identify undiagnosed depression, which in turn will lead to appropriate treatment of depression and more consistent follow-up.

Provider Awareness, Attitudes and Confidence

Depression is prevalent in the primary care setting but has been found to be underdiagnosed and undermanaged by primary care providers. Multiple reasons for this have been suggested such as limited appointment times, clinic resources, and provider attitudes and confidence in providing care for depressed patients. Studies have started to focus on these attitudes and confidence barriers to better understand how they play a role in communication, engagement and treatment decisions. Manzanera, Lahera, Álvarez-Mon, and Alvarez-Mon (2018) study found that provider attitudes and confidence, measured by the Depression Attitudes Questionnaire (DAQ), can significantly improve after receiving structured education in psychotherapy. Coppens et al. (2018) study found similar findings using a multilevel intervention from the Optimizing Suicide Prevention Programs and their Implementation in Europe (OSPI-Europe) research project. In both studies, provider confidence was preserved at a 6-month

follow-up using the DAQ. Implementation of a structured educational course can be evaluated using a validated tool such as the DAQ to assess its impact on clinical practice.

Nurses care for patients across the life span and should be knowledgeable and confident when dealing with depression at every age. Lack of knowledge and negative attitudes may influence their practice behaviors. Ni et al., (2020) cross-sectional study measured nurse knowledge, attitudes and confidence using the R-DAQ and found that the nurses had limited knowledge about depression with neutral to slightly positive attitudes about depression. The nurses had more favorable attitudes about depression when their depression knowledge was higher. Haddad et al. (2018) conducted a randomized control trial that evaluated the effects of a training program on school nurses' knowledge, attitudes and depression recognition skills using the Depression Attitude Questionnaire and QUEST knowledge measure. The nurses' knowledge and confidence both improved. The nurses also showed increased optimism in depression outcomes, but they still preferred to refer to mental health specialist. Overall, the nurses were better able to recognize depressive symptoms and confidently address the depression so that the patients would receive appropriate care.

PHQ-9 Validity and Reliability

The PHQ-9 is a 9-item depression scale with a score ranging from 0-27 (Appendix A) that can be utilized for screening, diagnosing, monitoring, and measuring severity of patients' depression. The questions incorporate the DSM-IV depression criteria and rates the severity of the depression based on the frequency of the patient's symptoms (Kroenke et al., 2001). Studies involving eight primary care and seven obstetrical settings proved its validity and reliability. A score greater than 10 showed a sensitivity and specificity of 88% for MDD (Kroenke & Spitzer, 2002). Two meta-analysis also determined that the cut-off point of 10 has satisfactory diagnostic

advantages in a variety of settings including primary, secondary, community, inpatient and outpatient (Manea, Gilbody, & McMillan, 2015; Moriarty, Gilbody, McMillan, & Manea, 2015). The PHQ-9 depression scale is an efficient and effective tool to screen and diagnosis MDD in the primary care setting. Beebe and Utley (2018) found a 30% increase in depression diagnoses once they incorporated the PHQ-9 in a primary care setting. Integrating the PHQ-9 scale into the assessment process in primary care has the potential to detect undiagnosed depression and lead to improved management and outcomes.

Depression screening, diagnosing, and management in primary care

The USPSTF has found that depression diagnoses detected in adults through screenings in the primary care setting led to decreased clinical morbidity when treated with antidepressants, psychotherapy, or both (Siu et al., 2016). A retrospective cohort study examined the effects of depression screening on mood disorder diagnosis and antidepressant prescriptions for adults older than 65 in a primary care setting. The study found statistically significant higher rates of mood disorder diagnosis and antidepressant prescriptions in the screening group (15.5%) than the none screening group (2.7%). Depression screening has also been found to be negatively associated with inappropriate antidepressant prescriptions (Rhee, Capistrant, Schommer, Hadsall, & Uden, 2017). Despite the USPSTF current 2016 recommendations adult depression screening is still very low across the nation. Another retrospective study conducted in 2018 examined depression screening among adults who do not have a depression diagnosis. Although the study discovered depression screenings had increased significantly after the USPSTF's 2009 depression screening recommendation, national screening rates were only 1.4% of adult ambulatory visits (Bhattacharjee, Goldstone, Vadiei, Lee, & Burke, 2018).

Soltani, Smith, Beck, and Johnson (2015) successfully implemented a depression screening, diagnosis, and management protocol into two free clinics using the PHQ-2 and PHQ-9. Two quality improvement projects (Eubanks, 2017; Hoffhines, 2016) conducted by Doctor of Nursing practice (DNP) students implemented a standardized depression screening, diagnosis and management protocols in a free clinic and a primary care clinic. The projects increased depression screening in both clinics, which led to increased depression diagnosis and treatment at both settings. The studies revealed that student health care providers under the supervision of licensed professionals can effectively integrate and maintain a depression screening, diagnosis, and management program in a free clinic setting. Multiple guidelines and algorithms recommend that follow-up of a depression diagnosis and antidepressant initiation occur within two weeks of initial diagnosis (NICE, 2009; Tong Guo et al., 2015). This recommendation is due to a study finding that many patients discontinue the new medication within the first 30 days due to side effects, worsening symptoms, and suicidal ideations (Samples & Mojtabai, 2015). Measurement-based care (MBC) is a process in which standardized procedures are followed for assessment of symptoms, side effects, and treatment adherence, decision-making for treatment, consistent follow-up visits, and feedback to clinicians to assist decision making (Jha et al., 2019). In their retrospective analysis, Jha et al. (2019) found that when MBC was utilized in depression management, patients who had three or more follow-ups had the highest remission rates. MBC recommends follow-up occur every two weeks until the patient is stabilized on an antidepressant, but attrition rate proved to still be a problem in Jha et al’s (2019) study. Bhat et al. (2018) implemented a telemonitoring program in which the clinic pharmacist would call patients with new antidepressant prescriptions after two weeks to assess side effects, compliance, and suicidal ideations. The study indicated telemonitoring of antidepressant initiation, side effects,

compliance, and titration to be useful in the primary care setting. Incorporating the USPSTF's current 2016 recommendations with MBC is feasible within a free clinic that is run by both professional and student health care providers.

Depression, Chronic Conditions, and Low-Income

Depression has been found to impact chronic conditions negatively because it is associated with poor health choices such as smoking, sedentary lifestyle, overeating, and medication nonadherence. Two studies found that patients with MDD have lower diabetic self-care and health problem solving skills than those without depression (Shin et al., 2017; Whitworth et al., 2016). Kim, Shin, and Song (2015) cohort study found women to have a higher prevalence of depression and comorbid conditions than men. The study's findings indicated a need for depression management in order to improve comorbid condition outcomes. In 2016 a randomized control trial by Gallo et al. that compared usual care versus depression management found that depression management decreased the risks of mortality in those with multimorbidity. Depression screening, management, and treatment should be a fundamental aspect of primary care and not a minor focus or after thought.

African Americans and women of all races have higher rates of poor mental health due to poverty, food insecurity, and lack of access to mental health services (Weaver et al., 2018). Patients who utilize free clinics are usually below the poverty level and many have food insecurity due to availability and affordability (Jones, 2017). Long term unemployment can lead to financial hardships and has been shown to increase a person's risk of developing depression the longer they are unemployed (Nurmela et al., 2018). Low-income mothers, particularly those experiencing the coverage gap, are at higher risk of experiencing depressive symptoms and not having access to mental health services (Oh, Salas-Wright, & Vaughn, 2018). Comprehensive

health care models that include sufficient mental health services are needed in underserved communities to ensure healthy individuals and families (Weaver, Taylor, Chatters, & Himle, 2018).

Summary of Literature Review

This literature review identified that limited knowledge and confidence can negatively affect both primary care providers and nurses' clinical practice when it comes to recognizing and managing depression. It suggests that a structured educational intervention can significantly improve their knowledge and confidence in depression management. Both the DAQ and R-DAQ were found to be reliable tools to accurately assess the impact of an educational intervention. The literature review also examined the original development of the PHQ-9 and how it's validity and reliability were established. The PHQ-9 is a reliable tool to screen, monitor, and evaluate the progress of a depression diagnosis. Although the literature review showed that depression screening and management are recommended and easily integrated into primary care, there was undoubtedly a gap in depression screening and management in primary care exposed. A significant correlation between depression, low-income, and chronic disease was also identified, and the studies indicated that each negatively affect the other. Lastly, three student lead QI projects that focused on improving the depression screening and management process showed encouraging results that a similar project could be replicated in a free clinic setting.

Limitations identified were that most of the studies were lower quality studies such as retrospective and uncontrolled cohort studies with small sample sizes ($\leq$ 500) (Beebe & Utley, 2018; Bhat et al., 2018; Bhattacharjee et al., 2018; Jones, 2017; Kim et al, 2015; Nurmela et al., 2018; Oh et al., 2018; Rhee et al., 2017; Shin et al., 2017; Soltani et al., 2015; Suk Lee et al., 2017; Weaver et al., 2018; Whitworth et al., 2016). Strengths identified in seven studies were

large samples sizes (≥ 500) and long-time frames (greater than 1 year) (Bhattacharjee et al., 2018; Jones, 2017; Kim et al, 2015; Oh et al., 2018; Rhee et al., 2017; Suk Lee et al., 2017; Whitworth et al., 2016). Two meta-analysis were included in this review that further validated the reliability of the PHQ-9 cut off point of 10 in diagnosing MDD (Manea et al., 2015; Moriarty et al., 2015). One randomized control trial showed statistically significant results of depression management mitigating the mortality risk of comorbidity (Gallo et al., 2016). This evidence supports that a depression screening and management protocol integrated by a DNP student into a free primary care clinic has the potential to improve health care outcomes in the underserved population.

Theoretical and Conceptual Framework

Plan, Do, Study, Act Model

Health care practices should be evidence based and the outcomes should be evaluated. The Institute for Healthcare Improvement's (IHI) model for improvement known as the Plan, Do, Study, Act (PDSA) cycle is an efficient model to help make change and evaluate that change (IHI, 2020a). It has effectively been utilized by many health care organizations, including QI projects that implemented and evaluated a depression screening and management protocol in a free clinic and primary care setting (Eubanks, 2017; Hoffhines; 2016). It is easy to implement in a variety of practice settings and is not affected by a practice's size or resources (PDSA, 2016). IHI also supplies PDSA worksheet and tools that are readily available for the public to use in their own practice improvement process (IHI, 2020b).

The model (Figure 1) is based on two components, one is three questions to ask and the second entails the four stages (Plan, Do, Study, Act) of the improvement process. The three questions are (1) What are we trying to accomplish? (2) How will we know that a change is an

improvement? and (3) What changes can we make to make an improvement? The questions can be asked in any order and are the guide for the four stages. The PDSA is an approach to learning by implementing a change by mirroring the traditional scientific method (Science, 2020).

Plan

The Plan stage includes identifying the problem, the process changes, and how it is going to be evaluated (Finkelman, 2018). The PDSA team should be identified with a key stakeholder from each department that will be influenced by or be a part of the change. The team will work together to identify the aim, data collection, outcome measures, and how the change will be implemented (Lee, 2016).

Do

The Do stage is integrating the change into practice on a small scale (Science, 2020). The time frame of this stage should be long enough to acquire sufficient data that identifies the pros and cons of the change. The team should be kept in engaged with daily or weekly huddles that discuss the new process (Finkelman, 2018).

Study

The Study stage is the process of analyzing the outcome measures and discussing the possible reasons that caused the results. The purpose is to determine if the outcome goals were reached and what changes could be made if they were not reached (Lee, 2016). Team analysis of the results can demonstrate how improvements can be made for the next PDSA cycle (Finkelman, 2018).

Act

The Act stage is the point in the cycle where the team will decide to adopt, adapt, or abandon the change. Adopting the change if the process worked, and the desired results were

achieved. Adapting the change may be necessary when there are weaknesses identified in the process that could be improved. If the change was adapted the team would then restart the plan stage. Abandoning the new process if it did not work and is not suited for the current time and environment (Lee, 2016). A set policy should be established within the system if the new process generated improvement (Finkelman, 2018).

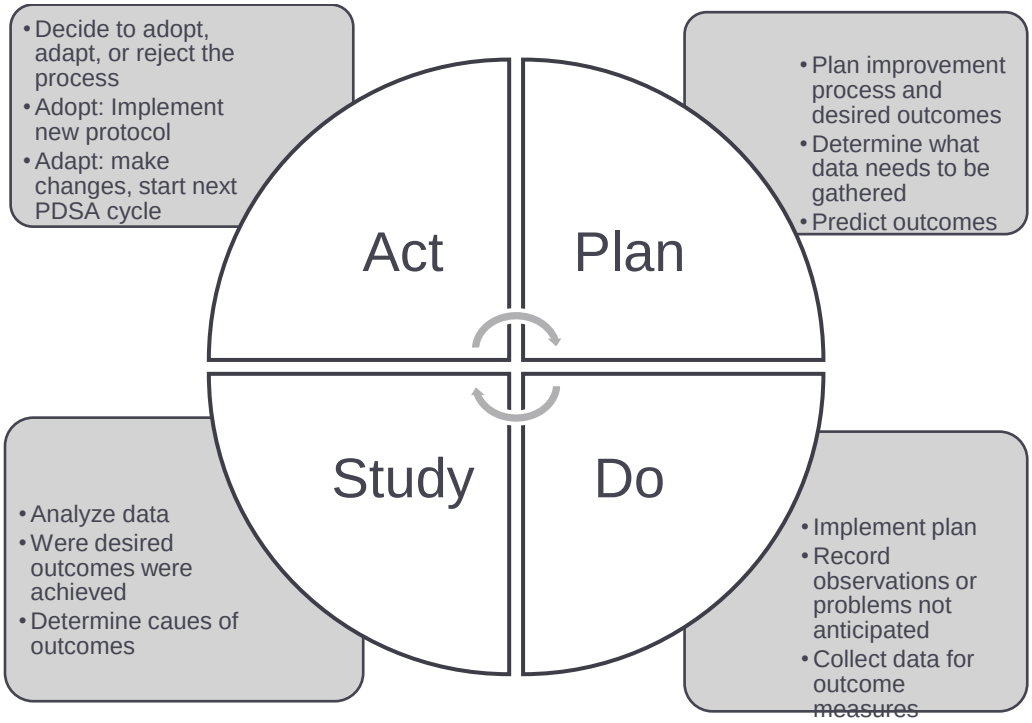

Figure 1. Plan-Do-Act-Study cycle.

Diffusion of Innovation Theory

The Diffusion of Innovation (DOI) Theory was created in 1962 by Everett Rogers. It started in the field of communications and explained how people adopt a new idea, behavior, or product through the diffusion process. Since then, it has now been used to guide change in a multitude of fields such as public health, social work, and marketing. In order for people to want to change they need to understand how the new idea, behavior, or product is innovative (Roger,

2003). New evidence-based health care practices are at risk for opposition as people can be resistant to change that they do not view as beneficial (White, Dudley-Brown, & Terhaar, 2019). In health care the DOI theory has been used to disseminate new ideas and explain how new processes can generate better patient outcomes and in turn the new practices have better acceptance and implementation (LaMorte, 2019).

The adoption of an innovation goes through stages of diffusion, which are acknowledging the need for an improvement, deciding the change will meet the needs for improvement, trialing the innovation on a small scale to analyze it, and continuing or rejecting the change (Rogers, 2003). Five factors influence how well an innovation will be adopted: (1) relative advantage, which is how an innovation is perceived and whether it is better than its replacement, (2) the compatibility of the innovation with current values, experiences, and needs, (3) complexity is how difficult the innovation is to understand and adopt, (4) trialability is the innovations ability to be trialed before it is adopted, and (5) observability is how well the change or new idea can provide substantial outcomes (LaMorte, 2019). The success of the DOI theory in a variety of specialties makes it an attractive theoretical framework for this project.

Roger's (2003) DOI theory identifies five different types of adopters or people involved in the change, which are the innovators, early adopters, early majority, late majority, and laggards. The innovators invent the change and get the process started; early adopters are usually leaders and are aware of the need for change and don't need additional information to be convinced to make a change. Early adopters typically are not leaders but will are willing to change so long as there is some evidence already of its success. The late majority are more conservative, not only do they want to see evidence of success, but they also want to see that the majority have already adopted the change. The laggards are the most difficult group to convert

and will need statistics and often pressure from the other groups (LaMorte, 2019). The stages of diffusion and the five factors affecting those stages can assist in understanding the target population and how they can be influenced to accept a change (Rogers, 2003).

Application of IHI's Model for Improvement and Roger's Diffusion Theory

The IHI's Model for Improvement is a standardized method that has been tested and proven to guide QI improvement processes in a variety of settings (Science, 2020). The PHQ-9 has already been utilized at the clinic to screen patients for depression. In this project it was incorporated into a protocol that clearly aligned the PHQ-9 score with a level of depression. The protocol also guided the providers on best practices with treatment and following-up recommendations that are evidence based. An initial draft of the new depression screening protocol was trialed in the first PDSA cycle. Outcomes were measured and evaluated by the project lead and team members. Changes were made as necessary and the PDSA cycles were restarted for a total of three 4-week PDSA cycles. Based on the data collected during the PDSA cycle a final draft of the policy on depression screening and management was created. This policy is an evidence-based algorithm that represents quality, safety, and organization.

In order to implement this project, the clinic providers, case management, and clinic owners needed to recognize how this new evidence-based algorithm was superior to the clinic's current practices. The DOI theoretical framework was the guide on how to inform and persuade the adopters that this innovation was valuable. The adopters needed to know if this improvement process was difficult to utilize and if the trials (PDSA cycles) would be time and cost effective. In addition, they needed to know how positive results can affect their patient outcomes, influence on the community, and governing bodies support.

The project lead was considered to be the innovator and change champion. The clinical coordinator who was the main physician assistant (PA) was an early adopter, as well as the primary medical assistant (MA). The early adopters were also the other NP students and nursing students as they were most likely still learning current best practices and had not solidified their own practice preferences. The other experienced health care professionals were the early majority as the they may have already developed personal practices that they believe are superior. The late majority and laggards unofficially identified themselves as the QI project progressed.

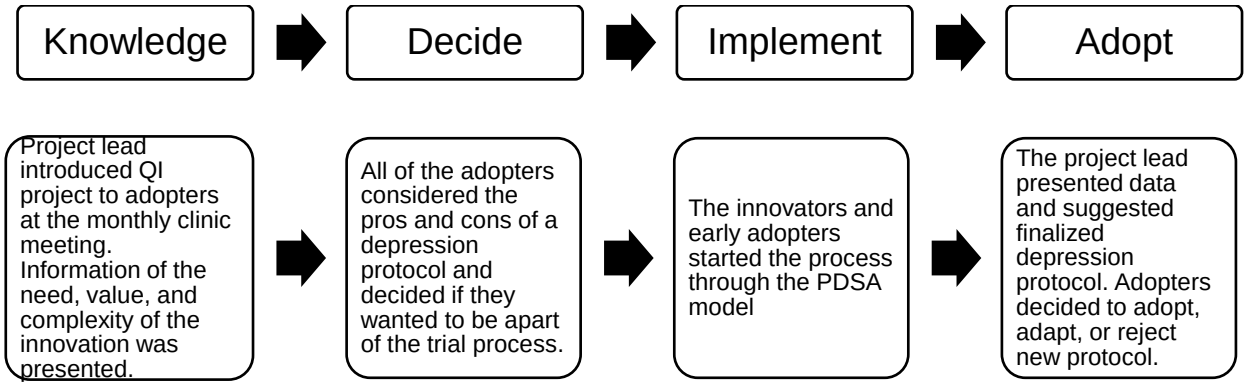

Figure 2. Diffusion of depression protocol adoption.

Summary

Screening for depression is an essential first step in identifying those with depression, but evidence-based treatment and adequate follow-up are also needed in order to see patient improvements. The PDSA cycle is a simple improvement process guide that is easily reproduced in the healthcare setting. It allowed for multiple short trials of a depression algorithm that could be changed and improved before setting as clinic policy. Applying the DOI theory to this project enhanced the project lead's ability to assess the providers' readiness and willingness to adopt a new depression protocol. It was encouraging that both the PDSA model and DOI theory have been successful in guiding process improvements in a multitude of settings.

Project Description and Design

Setting

In 1997, a free clinic was founded in a north Florida county to provide the homeless and uninsured low-income adults with free medical services. The clinic's mission is to empower the homeless and low-income back to a life of self-sufficiency by providing food, clothes, case management, and medical programs. This clinic only has one location that houses the executive offices, kitchen, showers, and medical clinic. The medical program is primarily run by one PA and one MA. All other staff positions are filled by volunteer medical doctors (MD), nurses, and health care students from the community. The clinic is financed through government aid, hospital partner grants, and community donations. The medical clinic provides services for adult and senior acute care, chronic care, dental care, specialty referrals, and medications. Specialty providers such as cardiology, orthopedics, physical therapy, ophthalmology, and psychiatry also volunteer onsite approximately two to four times a month (Mission House Clinic, 2018). The patient demographics are all adults ages 18 and older with varying races including Caucasian, African American, and Native American. The clinic serves approximately 113 patients per month with primary concerns being annual wellness, diabetes, hypertension, hyperlipidemia, and depression (Mission House Clinic, 2018). A SWOT analysis (Figure 3) was completed to assess the clinic's overall readiness to implement this project.

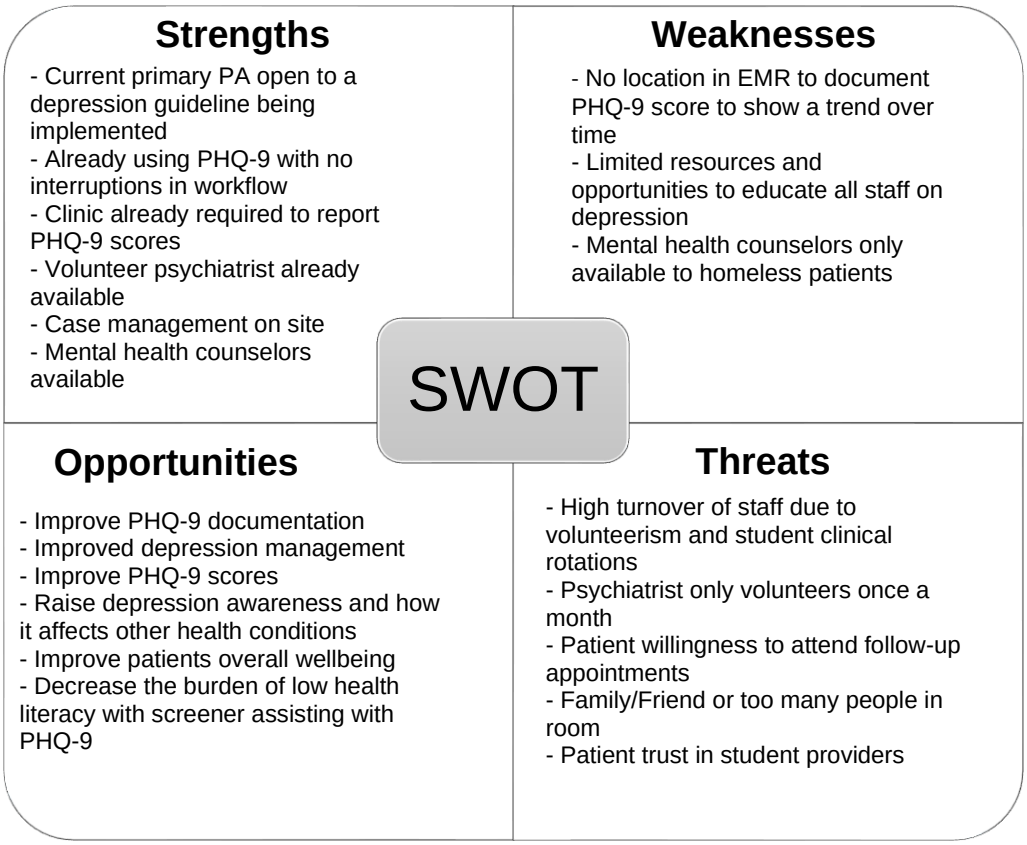

Figure 3. Strengths, weakness, opportunities, and threats analysis.

Participants

The participants of interest were the health care personnel, which included student and professional MAs, nurses, NPs, PAs, and MDs. At the start of implementation there were seven providers who participated in the pre-survey and three providers participated in the post-survey. All of the health care personnel were volunteers from the community except for one PA and one MA. The professional health care personnel were all licensed within the state of Florida. All of the healthcare personnel's scope of practice allowed them to screen patients for depression. All

of the licensed providers' scope of practice allowed them to diagnose and treat depression. The licensed providers' scope of practice was extended to the student providers with supervision.

The indirect population of interest were the patients who presented to the clinic for routine or acute primary care medical appointments. The patients consisted of adults 18 years and older in the low-income, uninsured, undocumented immigrant, and homeless populations. There were 115 primary care visits evaluated for this project over the course of 12 weeks. All patients were screened for depression unless they refused. Patient assessment and treatment remained up to the discretion of the licensed provider. Patient participation, PHQ-9 score, diagnosis or treatment were not identifiable, nor would it affect their eligibility to receive healthcare from the clinic or healthcare referrals.

Stakeholders

The stakeholders identified were the project leader, primary PA, primary MA, case manager, volunteer providers, health care students, hospital partner, and the patients. The patients were considered stakeholders because the new process would directly affect the care provided to them. The project leader established rapport with the primary PA and clinic staff through completion of two clinical rotations at the clinic. The primary PA and case manager were consulted about the project idea and agreed there was a need for improvement and monitoring the new process. Permission to complete this project at this free primary clinic was obtained (Appendix B).

Provider Education

Provider education consisted of a 30-minute presentation on the project by the project lead. The providers also received a 45-minute continuing education (CE) course developed by the American Association of Nurse Practitioners (AANP) CE center (American Association of

Nurse Practitioners, 2020). The course covered depression screening tools, motivational interviewing, and pharmacological interventions for individualized depression management in primary care (American Association of Nurse Practitioners [AANP], 2020). Permission was obtained from the AANP CE center to use the course for this DNP project (Appendix C). The main educational meeting and follow-up monthly meetings were face-to-face while following the current social distancing recommendations for Covid-19 prevention. All participants wore a face mask and maintained six feet apart. Hand sanitizer and a restroom with a sink was available to maintain hand hygiene. The educational course was available for free online to all learners. The participants who could not attend in person were sent a link via email for them to complete the survey and educational course on their personal computer or other electronic device.

Methods

The timeline for implementation and data collection was a total of 14 weeks. The first week consisted of provider recruitment to participate in the depression CE course and R-DAQ survey by communication from the project lead via email, phone, or in person at the clinic. A recruitment flyer was posted in the charting area and staff restrooms. Consent was obtained via their return of the completed survey to the project lead. Participants were eligible for a CE upon completion of the course. The first week also consisted of a staff meeting where the project importance, plan, objectives and depression education was introduced to the participants with discussion of the following materials: the PHQ-9 (Appendix A), PHQ-9 scoring severity and treatment recommendations (Appendix D), the screening and managing adult (age > 18 years) depression algorithm (Appendix E), a PDSA cycle template (Appendix F), and the audit worksheet (Appendix G). The R-DAQ (Appendix H) was administered prior to the education session and at the end of the 12-week project implementation. The PDSA template was utilized

at the monthly meetings to discuss current outcomes and establish initial goals for the clinic to achieve during the first PDSA cycle. Three PDSA cycles of four weeks were conducted to allow enough time to collect data and to observe any issues that may have occurred. Volunteer and student nurses and MAs were to screen the patients for depression using the PHQ-9 form and either document the results on the paper form and/or in the electronic medical record (EMR). Paper forms were utilized due to not all volunteer providers having immediate access to a clinic computer. The EMR was updated within 24 hours by the primary MA. The providers were to then document a depression diagnosis and a treatment plan based on the PHQ-9 score and their assessment of the patient. The DNP student collected data on PHQ-9 scores, depression diagnosis, and depression treatment plans each week. The DNP student also communicated directly with the staff on any issues or questions they had with the new process and made note of these in the PDSA cycle form. At the end of each four-week PDSA cycle data was reviewed with the staff to discuss if goals were met, what problems occurred and whether or not to adjust or continue the current process for the next PDSA cycle. The last week (week 14) consisted of data analysis, evaluation of findings, and development of new recommendations for practice.

Week 1	**Weeks 2-5**	**Weeks 6-9**	**Weeks 10-13**	**Week 14**
Provider recruitment. Presented project, R-DAQ survey and depression education to participants.	PDSA Cycle 1. Monitored implementation process. Conducted weekly chart audits.	Discussed with staff to either adopt or revise process. PDSA Cycle 2. Monitored implementation process. Conducted weekly chart audits.	Discussed with staff to either adopt or revise process. PDSA Cycle 3. Monitored implementation process. Conducted weekly chart audits. Administered R-DAQ survey	Analyzed data using JMP PRO 15.1 and IBM SPSS Statistics 27. Disseminated findings to stakeholders, instructors and student colleagues.

Figure 4. DNP project timeline

Tools

The following tools were included in this project.

PHQ-9 depression scale, Appendix A.

A color-coded version of the PHQ-9 from the Center for Quality Assessment and Improvement in Mental Health (CQAIMH) (2020a; 2020b). A study containing 3,000 patients who were assessed by 62 primary care physicians and one mental health professional produced a kappa of 0.65 for interrater reliability (Spitzer, Kroenke, & Williams, 1999). This tool is publicly available.

Treatment recommendations, Appendix D.

The PHQ-9 scores the severity of the depression and recommends a treatment plan based on the evidence-based studies evaluated for the MacArthur depression toolkit (The MacArthur Initiative on Depression & Primary Care (MIDP, 2009). These recommendations are further endorsed by the Department of Veterans Affairs Department of Defense treatment guidelines (Va/DoD, 2016) and current evidence reviewed by UpToDate (Simon, 2019a; Simon 2019b).

Depression protocol, Appendix E.

A depression screening and management algorithm adapted from VA/DoD (2016) management guidelines, the MacArthur depression toolkit recommendations (MIDP, 2009), and UpToDate evidence-based practice literature reviews (Simon, 2019a; Simon, 2019b). The algorithm streamlines the decision-making process for managing depression based on PHQ-9 scores. The simplified and visual flow supports diffusion of the innovation into practice.

PDSA template, Appendix F.

A one-page PDSA cycle template was developed based on the free template provided by the IHI (PDSA, 2020). This form was used during staff meetings as a guide to review goals and outcomes of the current process.

Audit worksheets, Appendix G.

The audit worksheets created by the project lead to collect patient visit data were in electronic form and stored on the RPIs secure JU server. Patient identifiers were not collected. For each patient encounter data to be collected included gender, age, race, if a PHQ-9 was completed, if there was a depression diagnosis made, and if there was a depression treatment plan documented.

R-DAQ survey, Appendix H.

The revised-depression attitude questionnaire (R-DAQ) was a revision of the original DAQ (Botega et al., 1992) developed by Haddad et al. (2015). It is a 22-item questionnaire that measures healthcare providers' attitudes towards caring for patients with depression. It is a Likert-type scale with responses that range from 1 (strongly disagree) to 5 (strongly agree). It measures three domains which include professional confidence, therapeutic optimism, and provider perspective on depression recognition and management. A Cronbach's alpha of 0.84 was reported for internal consistency. The scale's validity and reliability were established by 38 healthcare professionals in the second phase of the validation study (Haddad et al., 2015). Permission to use this scale for this project was granted through the creative commons license (Appendix I).

Depression education, Appendix J.

A power point presentation developed by the project lead. The presentation covered what depression is, the PHQ-9 and the project importance and purpose were presented to the stakeholders prior to implementation.

Objective Measures

1. Evaluate PHQ-9 utilization based on how many primary care patient visits have a PHQ-9 completed.
2. Evaluate depression management by how many depression diagnoses are made based on positive PHQ-9s and how many depression diagnoses have a treatment plan in place.
3. Evaluate improvement of PHQ-9 scores based on the percentage of PHQ-9 scores that improve by at least one point between baseline and most recent score.

Data Collection and Analysis

A chart audit was conducted for three months after project implementation to evaluate the number of PHQ-9s completed, depression diagnosis, depression treatment plans documented and PHQ-9 scores. Patient demographic data collected was age, race, and gender to generalize study outcomes. Pre and post survey results were collected before and after project implementation. Provider demographic data collected was provider type (MA, nurse, MD, NP, PA) and years of experience.

All data was entered into an excel spreadsheet and then analyzed using either the JMP PRO 15.1 or the IBM SPSS Statistics 27. A two-sample t-test or Mann-Whitney-U test was used to compare pre- and post-provider survey results. The same test was used to compare the percentage of pre and post PHQ-9 scores that improved by one point. The t-test and Mann-Whitney-U was appropriate because it is used when there are two groups that have a continuous variable for the outcome (Knapp, 2017a). Either test was used depending on distribution of data.

A chi-square test was used to analyze categorical variables of PHQ-9s completed to determine if there was a statistically significant difference between the three PDSA cycles. A chi-square test was also used to analyze depression diagnosis and treatment plans documented for PHQ-9 score 5 or greater to see if there was a significant difference between positive and negative PHQ-9 scores with and without a diagnosis and treatment. The chi-square test was appropriate because it analyzes different category counts without having to specify any additional processing parameters (Knapp, 2017b).

Table 1

Patient Demographic Data

Demographic Data	Level of Measurement	Rational for Inclusion	Descriptive Statistics
Age	Interval	Generalize study outcomes to target population	Frequency & Percent
Race	Nominal	Generalize study outcomes to target population	Frequency & Percent
Gender	Nominal	Generalize study outcomes to target population	Frequency & Percent

Table 2

Provider Demographic Data

Demographic Data	Level of Measurement	Rational for Inclusion	Descriptive Statistics
Provider Type (MA, RN, NP, PA, MD)	Nominal	Generalize study outcomes to target population	Frequency & Percent
Years of Experience (No experience, 1-5 years, etc.).	Nominal	Generalize study outcomes to target population	Frequency & Percent

Table 3

Study Outcome Measures: Provider Survey, PHQ-9 Utilization, Depression Diagnosis Rate, Depression Treatment Plan Rate, and PHQ-9 Scores

Measure	Level of Measurement	Descriptive Statistics	Statistical Procedure
Provider Survey	Interval	Median & Standard Deviation	Two sample t-test or Mann-Whitney-U
PHQ-9 utilization rate (Yes/No)	Nominal	Frequency & Percentage	Chi-Square
Depression Diagnosis rate (Yes/No)	Nominal	Frequency & Percentage	Chi-Square
Depression Treatment Plan rate (Yes/No)	Nominal	Frequency & Percentage	Chi-Square
PHQ-9 Score	Interval	Frequency & Percentage	Two sample t-test or Mann-Whitney-U

Budget

Since this is a free clinic this project budget was only projected to cost approximately $50 for printed PHQ-9s and printer ink. A copy of the appendices was printed and passed around to the meeting attendees. The audit worksheet remained electronic for the duration of the project. In order to portray reproducibility in other primary care clinics a theoretical budget was produced based on if the clinic was not a free clinic and the highest paid individuals in healthcare at this time were hired to fulfill the roles of depression screening, diagnosis and treatment. If a registered nurse were the primary depression screener an average annual salary of $59,000 would be estimated (Nurse Journal: Social Community for Nurses Worldwide, 2020). If a medical doctor were the primary provider to provide depression evaluation, diagnosis, and treatment an average annual salary of $200,000 would be estimated (U.S. Bureau of Labor Statistics, 2019). It was estimated that it would take 10 minutes for the nurse to check-in the patient, take vital signs, and screen the patient for depression. It was estimated that it would take the provider 30 minutes to evaluate, diagnosis and develop a treatment plan for depression. The cost of the nurse for 10 minutes was approximately $4.72 based on the following equation $59,000 annual salary divided by 52 weeks in a year equals $1,134.61 per week divided by 40 hours equals $28.36 per hour divided by 6 equaled $4.72 per 10 minutes. The cost of the provider for 30 minutes was approximately $48 based on the following equation $200,000 annual salary divided by 52 weeks in a year equaled $3,846.15 per week divided by 40 hours equaled $96.15 per hour divided by 2 equaled $48.07 per 30 minutes. This brought an estimate of a $52.79 cost for each depression screening and management primary care visit. This cost was be expected to accrue at each follow-up appointment for patients who were diagnosed with depression. The total annual cost may vary based on a clinic’s patient load, how often they choose to screen for depression and

how many depression appointments were made. The depression CE was provided free and is available to the public online. The education session was expected to last approximately 1.5 hours with five nurses and five providers attending, which brings an estimated cost of $933.83.

Medicare pays $18 for one annual 15-minute depression screening for adults and most other payers will reimburse a clinic at least $15 for the same service (Savoy, M. & O'Gurek, 2016). The CPT codes for a new patient 30-minute appointment is 99203 and for an established 25-minute appointment is 99214 (The DO, 2018). Medicare currently reimbursed CPT code 99203 at $110 and CPT code 99214 at $109 (The DO, 2018). If this were a primary care clinic that accepted Medicare the total reimbursement for depression screening and management would be approximately $125 making a $72.21 profit after the cost of the nurse and physician are subtracted. Primary care offices seeing established patients consistently with only one reimbursed screening per year would have a profit of approximately $56.21 per depression follow-up. Based on these estimates, depression screening and management within the primary care setting is likely to be feasible. The new protocol for depression screening is expected to be sustainable by educating all new volunteers and students about depression screening and management. Seasoned staff will also be expected to evaluate the process and its outcomes periodically during monthly meetings to ensure it is still satisfactory.

Ethical Considerations

Prior to the start of the project, approval was granted from the health care facility and was obtained from Jacksonville University's Institutional Review Board (IRB). All patient data was kept in their medical paper charts, which was secured in a locked drawer at the free clinic. All patient information on the free clinic's electronic medical record was in a password protected software and on password protected computers. Audit worksheets were kept on the RPI's

personal server through their JU account that is password protected. Patient data and provider responses were deidentified. The clinic name, hospital partner name, and exact location were not identified. Project data will be saved for three years post publication of the article in electronic format in a secure HIPAA compliant cloud-based server in the RPI's JU account.

Results

The purpose of this project was to develop, implement, and evaluate an adult depression screening and management protocol that can be integrated as standardized practice into a free primary care clinic in North Eastern Florida. To help achieve this a depression survey and educational video was given to all of the current clinic providers, nurses/medical assistants and other ancillary personnel. The new evidence-based depression screening and management algorithm (Appendix E) was also posted at each of the providers workstations for reference.

Provider Demographics

A total of eight people participated in the R-DAQ survey via an online link via email. Survey participants were not able to complete the survey in person at the clinic due to social distancing restrictions. Seven people participated in the pre-survey and three people participated in the post-survey. Five participants only completed the pre-survey and one participant only completed the post-survey. Two people completed both a pre- and post-survey. The pre-survey participants consisted of one MD, one PA, one NP, one NP student, one nurse, one MA, and one other. The pre-survey participants level of experience ranged from no experience to twenty plus years of experience. The post-survey participants consisted of one nurse (1-5 years), one NP (6-10 years) and one MD (20+ years). Post-survey participants were noted to be all healthcare professionals with experience in comparison to the pre-survey participants who included novice,

an NP student and possibly a non-healthcare staff member indicated as “other”. Figures 5 and 6 illustrate the pre- and post-survey participants professional title and years of experience.

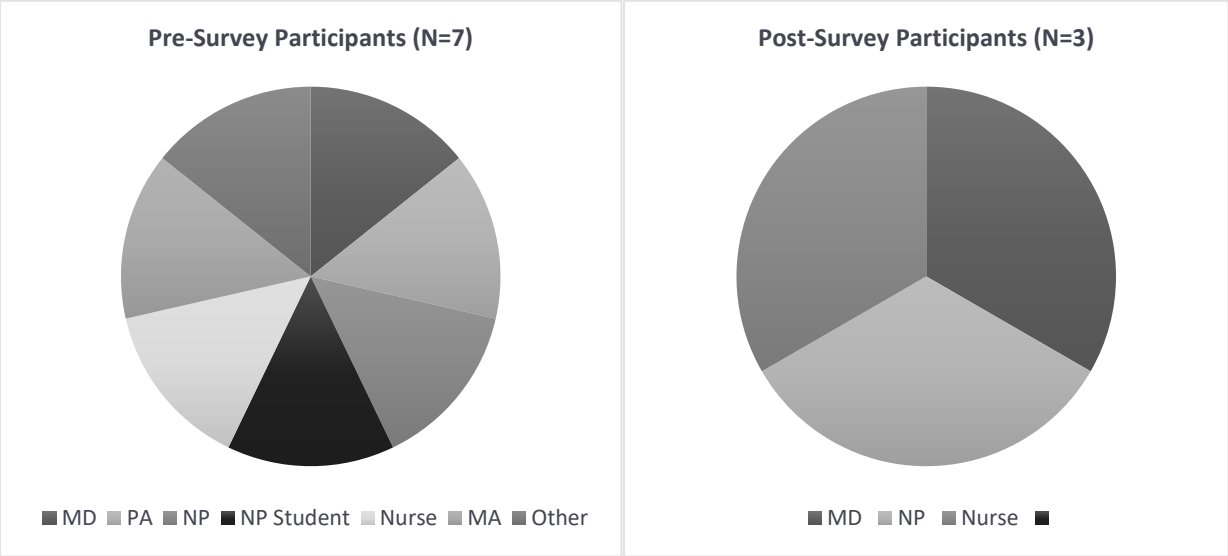

Figure 5 Illustration of survey participants by profession.

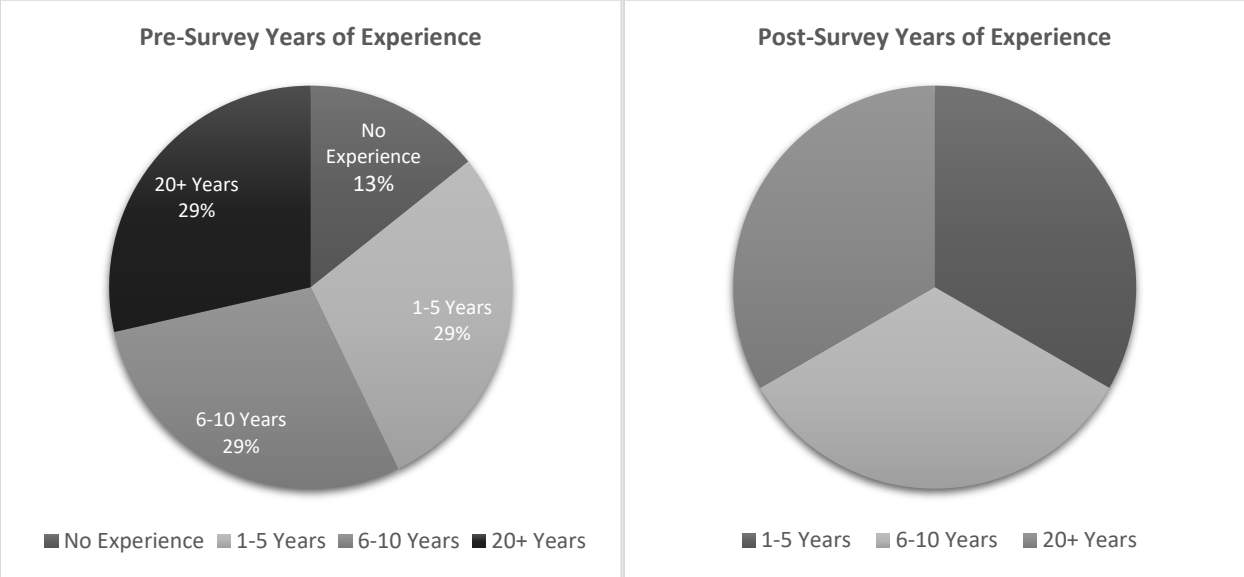

Figure 6 Illustration of survey participants by years of experience.

Survey Responses

The R-DAQ survey was used to measure the participants overall attitudes, confidence and perspectives on depression before and after the implementation of the project. The R-DAQ

questions evaluate three categories which include generalist perspective, therapeutic pessimism, and professional confidence. Table 4 presents participant responses to the R-DAQ grouped by category.

The generalist category received positive responses in both the pre- and post-surveys respectively (pre%, post%). The majority agreed that depression is like any other disease (71%, 67%), recognizing depression is an important skill (100%, 100%), depressed people have similar care needs (86%, 67%), managing depression helps manage other health problems (100%, 100%) and anyone can suffer from depression (100%, 100%). However, participants were less likely to agree that is it rewarding to manage depressed patients (57%, 33%).

Therapeutic pessimism was minimal in the pre-surveys with only 14% agreeing that psychological and antidepressant therapy tends to be unsuccessful for treating depression. One participant (14%) also agreed that becoming depressed was a natural part of adolescence. The post-surveys show no pessimism (0%) for all ten items in this category.

The professional confidence in depression care category showed most participants felt comfortable in managing (71%, 100%) and assessing for depression in patients (71%, 100%). However, the pre-survey participants were less likely to agree that they are well placed (57%) or well trained (43%) to assist depressed patients. Less than half (43%) felt confident in assessing a patient's suicide risk. However, the majority (71%) of pre-survey responses did not feel more comfortable working with physical illness either. Post-survey participants 100% agreed that they are well placed, trained and confident to assist and assess depressed/suicidal patients, but they also feel more confident in dealing with physical illness than they do mental illness (100%). The two participants who submitted a pre- and post-survey did not show a significant change in responses (P=0.0577).

Table 4

R-DAQ Responses Grouped by Category

	Pre – Survey				Post – Survey			
RAD-Q Items	% agree	Mean	SD	Median	% agree	Mean	SD	Median
Generalist Perspective								
2. Depression is a disease like any other (e.g. asthma, diabetes)	71%	3.71	1.60	4	67%	3.67	2.31	5
10. All health professionals should have skills in recognizing and managing depression	100%	4.86	0.38	5	100%	5.00	0.00	5
14. People with depression have care needs similar to other medical conditions like diabetes, COPD, or arthritis	86%	4.00	1.41	4	67%	4.00	1.74	5
16. Recognizing and managing depression is often an important part of managing other health problems	100%	4.57	0.53	5	100%	5.00	0.00	5
19. It is rewarding to spend time looking after depressed patients	57%	3.43	0.79	4	33%	3.33	0.58	3
22. Anyone can suffer from depression	100%	4.86	0.38	5	100%	5.00	0.00	5
Therapeutic pessimism about depression								
3. Psychological therapy tends to be unsuccessful with people who are depressed	14%	2.14	0.90	2	0%	1.00	0.00	1
4. Antidepressant therapy tends to be unsuccessful with people who are depressed	14%	2.43	1.13	2	0%	1.00	0.00	1
5. One of the main causes of depression is a lack of self-discipline and will power	0%	1.57	0.53	2	0%	1.33	0.58	1
6. Depression treatments medicalize unhappiness	0%	2.14	0.69	2	0%	1.33	0.58	1
9. Becoming depressed is a natural part of being old	0%	1.00	0.00	1	0%	1.86	0.69	2
12. Becoming depressed is a way that people with poor stamina deal with life difficulties	0%	1.71	0.49	2	0%	1.00	0.00	1
13. Once a person has made up their mind about taking their own life no one can stop them	0%	1.29	0.49	1	0%	1.00	0.00	1
18. Depression reflects a response that is not amendable to change	0%	1.71	0.49	2	0%	1.33	0.58	1
20. Becoming depressed is a natural part of adolescence	14%	2.14	1.07	2	0%	1.00	0.00	1
21. There is little to be offered to depressed patients	0%	1.43	0.53	1	0%	1.00	0.00	1
Professional confidence in depression care								
1. I feel comfortable in dealing with depressed patients' needs	71%	4.00	0.82	4	100%	4.67	0.58	5
7. I feel confident in assessing depression in patients	71%	3.57	1.13	4	100%	5.00	0.00	5
8. I am more comfortable working with physical illness than with mental illnesses like depression	29%	3.29	0.95	3	100%	4.33	0.58	3
11. My profession is well placed to assist patients with depression	57%	3.43	0.79	4	100%	5.00	0.00	5
15. My profession is well trained to assist patients with depression	43%	3.29	0.76	3	100%	4.67	0.58	5
17. I feel confident in assessing suicide risk in patients presenting with depression	43%	3.14	1.21	3	100%	4.67	0.58	5

Note. SD = Standard Deviation

Patient Demographics

Patient demographics were collected for each patient appointment. A total of 115 chart audits were conducted during primary care appointments. Nine charts were noted to not available for audit during the project and therefore data was not collected from those charts. Male (51.3%) and female (48.6%) patients were closely represented within the project. The majority of patient ages ranged from 40-49 years (20.9%), 50-59 years (24.3%) and 60-69 years (27%). Patients under the age of 39 represented 19.2% and patients over the age of 70 represented 8.6% of the population. Caucasian non-Hispanic and Caucasian – Hispanic represented the majority (76.5%) of the patient population. The minority were represented by black (10%), Asian (4%), Native American (1%) and unanswered (12%) (Table 5).

Table 5

Demographic Description of Patient Population

	N	Percent
Gender		
Male	59	51.3
Female	56	48.6
Age		
18 - 39	22	19.2
40 - 69	83	72.2
70 - 89	10	8.6
Ethnicity		
Caucasian non-Hispanic	43	37.4
Black	10	8.7
Asian	4	3.5
Native American	1	0.9
Caucasian - Hispanic	45	39.1
Unanswered	12	10.4

Note. N = Total number

PHQ-9, Depression Diagnosis and Treatment Rates

Chart audits began immediately after the new depression education and management protocol were introduced to the clinic providers. It was noted during each PDSA cycle the goal of screening 100% of patients at each visit was not met (cycle-1%, cycle-2%, cycle-3%) (83%, 75%, 89%). A chi-square test determined the difference in PHQ-9 utilization each month was not statistically significant (*P*=0.1926) (Table 6). In cycle-1, 40% of the patients screened with the PHQ-9 received a score five or greater. A diagnosis and a treatment plan were documented for 60% of PHQ-9 scores five or greater. A chi-square test determined that the difference between positive and negative PHQ-9s receiving a diagnosis and treatment was statistically significant (*P*=.003, *P*=.003). In cycle-2, 51% of the patients screened with the PHQ-9 received a score five or greater. A diagnosis was documented for 28.5% and a treatment plan was documented for 50% of PHQ-9 scores 5 or greater. Both a diagnosis and treatment plan were documented for 28.5% positive PHQ-9 scores. A chi-square test determined that the difference between positive and negative PHQ-9s receiving a diagnosis or treatment plan was not statistically significant (*P*=.614, *P*=.058) nor was it statistically significant for both to be documented (*P*=.527). In cycle-3, 36% of the patients screened with the PHQ-9 received a score five or greater. A diagnosis and a treatment plan were documented for 31% of PHQ-9 scores five or greater. A chi-square test determined that the difference between positive and negative PHQ-9s receiving a diagnosis and treatment plan was statistically significant (*P*=.038) (Table 7).

Table 6

Number of Primary Care Appointments with PHQ-9 used to Screen for Depression

	Number of PCA	Number of PHQ-9 Screenings
PDSA Cycle		
1	30	25 (83%)
2	36	27 (75%)
3	49	44 (89%)

Note. PDSA = Plan, Do, Act, Study. PCA = primary care appointments.

Table 7

Number of positive PHQ-9s with a Depression Diagnosis and Treatment Plan

	September		October		November	
	N	P-Value	N	P-Value	N	P-Value
PHQ-9 screenings 5 or greater	10 (40%)		14 (52%)		16 (36%)	
Depression diagnosis documented addressing PHQ-9 score $\geq$ 5	6 (60%)	.003	4 (28.5%)	.614	5 (31%)	.038
Treatment plans documented addressing PHQ-9 score $\geq$ 5	6 (60%)	.003	7 (50%)	.058	5 (31%)	.038
Treatment plans documented addressing PHQ-9 score $\geq$ 5 with MDD diagnosis	6 (60%)	.003	4 (28.5%)	.527	5 (31%)	.038

Note. N = total number.

PHQ-9 Scores

PHQ-9 scores were collected on the patients seen during the first month of implementation to evaluate changes in their scores three months later. Twenty-six patients had a primary care appointment. Twenty-two patients had a PHQ-9 screening completed and a score documented. Only eight of these patients had a follow-up score available three months later (Table 7). Six (75%) scores decreased by at least one point. Two (25%) scores increased by at least one point. A paired t-test determined the decrease in the six scores and increase in the two scores was not significant (P=0.6667) (Table 8).

Table 8

PHQ-9 scores at the start of cycle-1 compared to PHQ-9 scores at the end of cycle-3

	N (%)	Mean	p-value
Patients	26		
Baseline Score	22 (85%)	5.5	
Follow-up Score	8 (36%)	6.0	0.6667
Scores Improved by one point	6 (75%)		

Note. N = total number

Summary of Key Outcomes

- The overall pre- and post- survey responses were positive and in agreement for the generalist category with the exception of not feeling reward when caring for patients with depression. The pre-survey responses had minimal therapeutic pessimism (14%) and the post-survey had no pessimism (0%). The pre-survey responses showed less overall confidence in caring for both patients with depression and physical illness. All (100%) of the post-survey participants felt confident in caring for both patients with depression and physical illness. The two survey participants who completed both a pre-and post-survey showed no statistically significant change between in their responses (P=0.0577). This outcome indicates that the majority of staff had a positive attitude towards screening and managing depression.

- PHQ-9 utilization during primary care patient appointments decreased 8% from PDSA cycle-1 to PDSA cycle-2 and increased 14% from PDSA cycle-2 to PDSA cycle-3. The changes in PHQ-9 utilization each month were not statistically significant (*P*=0.1926). This outcome indicates that the nurses, MAs and providers are not utilizing the PHQ-9 at every primary care visit.
- Depression diagnosis being documented with a treatment plan in place for positive PHQ-9s ($\geq$ 5) decreased 31.5% between cycles-1 and 2. It remained steady with only a 2.5% increase between cycle-2 and 3. The difference between positive and negative PHQ-9s with both a documented depression diagnosis and treatment plan was statistically significant for cycles-1 and 3 (*P*=.003, *P*=.038), but not for cycle-2 (P=.614). This outcome indicates that providers are not addressing all of the positive PHQ-9s.
- Eight PHQ-9 scores had both a baseline and follow-up available after the completion of the project. Six (75%) decreased by at least one point and two (25%) increased by at least one point. A paired t test determined the changes in the scores to not be statistically significant (*P*=0.6667).

Discussion of Findings

The project found limited but promising data to support its objective of evaluating depression awareness, attitudes, and confidence of the healthcare personnel before and after the project implementation. The majority were in agreement before and after implementation that screening and managing depression was important and that both psychotherapy and pharmacological therapy were successful treatments for depression. Overall, the providers did not show stigmatizing attitudes towards depression, but felt low confidence in managing depression and suicide. These findings were consistent with other another study's findings

conducted by Coppens et al. (2018) which assessed the depression knowledge, attitudes, and skills of 208 general practitioners. This suggest that primary health care providers may not receive adequate training in managing mental health diagnosis and their chosen specialty may not expose them to this patient population often.

This project was successful in meetings its objective of establishing preliminary data on depression screening, diagnosis, and management at this free primary care clinic. The findings of this project did not demonstrate a significant change in the PHQ-9 utilization between each PDSA cycle. However, the PHQ-9 utilization rates were comparable to Eubanks (2017) project that was also implemented in a free primary care clinic. The findings also revealed that the providers are not addressing all of the positive PHQ-9s and therefore patients are being underdiagnosed and undermanaged for depression at this clinic. Depression diagnosis and treatment plan documentation decreased from 60% to 28.5% between cycles-1 and 2. It remained steady in cycle-3 with 31% of positive PHQ-9s receiving both a diagnosis and treatment plan. Eubanks (2017) implemented a similar depression protocol with remarkable improvement of depression diagnosis and treatment plan documentation increasing from 50% to 87% in a two-month time frame. Provider feedback at this project's clinic on these findings were that they do not have enough time during appointments to address all of the patients' medical needs and mental health needs. Nurse and MA feedback was that they were not familiar with the clinic's workflow due to being students or volunteers who did not frequent the clinic. The education on the new depression screening and management algorithm posted in the clinic may have reminded the clinic staff to screen and manage patients with depression but was hindered by workflow and time restraints. These outcomes and staffs feedback suggest that additional resources and improved clinic flow are needed to adequately screen and manage depression at this clinic.

The clinic's hospital partner established a standard of improving PHQ-9 scores by one point. The data available from this project demonstrated an improvement of one point in six (75%) patient scores. Two patient scores increased by at least one point. It was noted that one of these patients was Spanish speaking only and was given an English version of the PHQ-9 (score 12) first and then was reassessed with a Spanish version at her follow-up (score 27). This outcome although not statistically significant did meet the clinic's goal.

Limitations

Limitations were identified during the implementation of this project. One limitation was the small sample size (N=8) of the clinical staff who participated in the R-DAQ survey. Additionally, only two participants completed a pre- and post-survey. The sample size was limited because the project site was a small primary care clinic with few staff members, many of whom are volunteers and students. The COVID-19 pandemic was also occurring at the time of implementation, which further limited available staff. Seasoned volunteers opted to not attend to decrease exposure and student participation was limited. A small sample size can decrease the variability in the responses and result in bias (Simmons, 2021). One bias that was detected was the non-response bias due to only two participants submitting a post-survey. The non-response bias may have also occurred during the pre-survey as responses relied on successful email delivery as opposed to in-person.

Another limitation was the daily clinic staff were different volunteers and students. Everyday there was a different team working together which resulted in an inconsistent workflow. This may have further limited the providers time with patients during appointments due to unexpected delays. The irregularity of staff limited internal validity for the new depression management protocol to be followed exactly the same way each time. Internal

validity is an important aspect to maintain consistent and sustainable outcomes over a long period of time (Gray, Grove, & Sutherland, 2017). Rogers DOI theory was used to guide the new process which required that the staff be knowledgeable and invested in making improvements (Rogers, 2003). The volunteers and students may not have been as invested in the new process due to their short and infrequent visits to the clinic.

Final Conclusions

Significance of Findings

In the United States, the prevalence of major depressive disorder in 2017 was about 7.1% of adults (NIMH, 2019). In 2020, the prevalence of depressive disorders increased from 6.5% during the first quarter to 24.3% during the second quarter (Czeisler et al., 2020). During the timeframe of this project this clinic had between 28.5% - 60% of patients diagnosed with a depressive disorder each month. The prevalence of depression diagnosis at this clinic coincides with the 2020 findings of the CDC and demonstrates the need for this clinic to not only continue to screen for depression but to adequately management it.

Recommendations for Practice

The uninsured and homeless are susceptible to depression and are at higher risk for it to go undiagnosed and unmanaged. Establishing this collaborative care model will assist this clinic to meet the patient population's mental health needs with its current budget, time constraints, providers and referral sources. Addressing facilitators and barriers to depression screening and management in primary care can ensure that depression is not undiagnosed and untreated in marginalized patient populations. Further, this quality improvement project adds to the literature on depression screening and management in primary care by evaluating providers perceptions of depression. It also established preliminary data on the implementation of an evidence-based

depression protocol into a primary care setting. The education course and depression protocol used in this project could be implemented at other facilities serving the uninsured and homeless population. Implementing a depression protocol that providers can reference can assist with their clinical confidence and provide reassurance that their clinical decision making will be evidence based.

Dissemination Plan

An abstract will be submitted for publication consideration to the Journal of American Psychiatric Nurses Association. This paper will also be submitted to the Jacksonville University site into the Virginia Henderson e-Repository at Sigma Theta Tau International. The project leader will disseminate the findings and recommendations of this project to the health care professionals and stakeholders at the facility. Lastly, the project will be shared with students and instructors in the Doctor of Nursing Practice program at Jacksonville University, Florida.

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Appendix A

Patient Health Questionnaire (PHQ-9)

Patient Name _____ Date of Visit _____

Over the past 2 weeks, how often have you been bothered by any of the following problems?	**Not At all**	**Several Days**	**More Than Half the Days**	**Nearly Every Day**
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed or hopeless	0	1	2	3
3. Trouble falling asleep, staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself - or that you're a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. 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	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

Column Totals _____ + _____ + _____

Add Totals Together _____

10. If you checked off any problems, how difficult have those problems made it for you to Do your work, take care of things at home, or get along with other people?

☐ Not difficult at all ☐ Somewhat difficult ☐ Very difficult ☐ Extremely difficult

The PHQ-9 was developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke and colleagues, with an educational grant from Pfizer Inc. No permission required to reproduce, translate, display or distribute.

Note. "The Patient Health Questionnaire-9 (PHQ-9) – Overview" by The Center for Quality Assessment and Improvement in Mental Health (CQAIMH), 2020b, *Stable Resource Toolkit*, p. 3. Retrieved from http://www.cqaimh.org/pdf/tool_phq9.pdf

Appendix B

Mission House Permission

Mission House Clinic
800 Shetter Avenue
Jacksonville Beach, FL 32250
www.missionhousejax.org
904.241.6767 ext. 112

April 24, 2020

To Whom It May Concern

The purpose of this memorandum is to confirm that Mission House has given Mrs. Ashley Gagné DNP student for Jacksonville University, permission to conduct a quality improvement project at its Jacksonville facility for her study, "Depression Screening and Management in a Free Primary Care Clinic".

At Mission House Clinic, a free clinic in Duval County, Florida, the PHQ-9 depression screening tool was implemented to identify depression among primary care patients. A chart review identified a significant increase in depression diagnosis. The purpose of this project is to develop, implement, and evaluate a depression screening and management protocol to better serve the needs of the patients at Mission House Clinic.

Mrs. Ashley Gagné will present her presentation on depression and the depression screening and management protocol to all current staff members and future health care students. Her plan is to observe the implementation of the new process for 12 weeks. She is allowed to obtain de-identified data on patient gender, age, and race. She is allowed to collect data on PHQ-9 rates, depression diagnosis rates, and treatment plan rates. Mrs. Gagné has agreed to provide to my office a copy of all comprehensive results. We understand that for Mrs. Ashley Gagné to achieve completion of the DNP program, dissemination of the project will be required by Jacksonville University, which will include a public presentation related to the project and a manuscript submission will be encouraged.

Should the JU Institutional Review Board have any questions, please do not hesitate to contact me directly.

Regards,

Nancy Crain, PA

Appendix C

AANP CE Center Permission

CE Center May 4, 2020, 11:37 AM (23 hours ago)

to me

Hello Ashley,

Per our VP of Education, Anne Norman, this is fine. This activity is open to all learners and we appreciate you making sure it could be used for your project. Please let us know how this is received by your learners. We use learner feedback to improve current activities and it helps us select topics for future programs.

You can reference it as: 20014098 Major Depressive Disorder. That way we know exactly where to apply any applicable feedback.

Appendix D

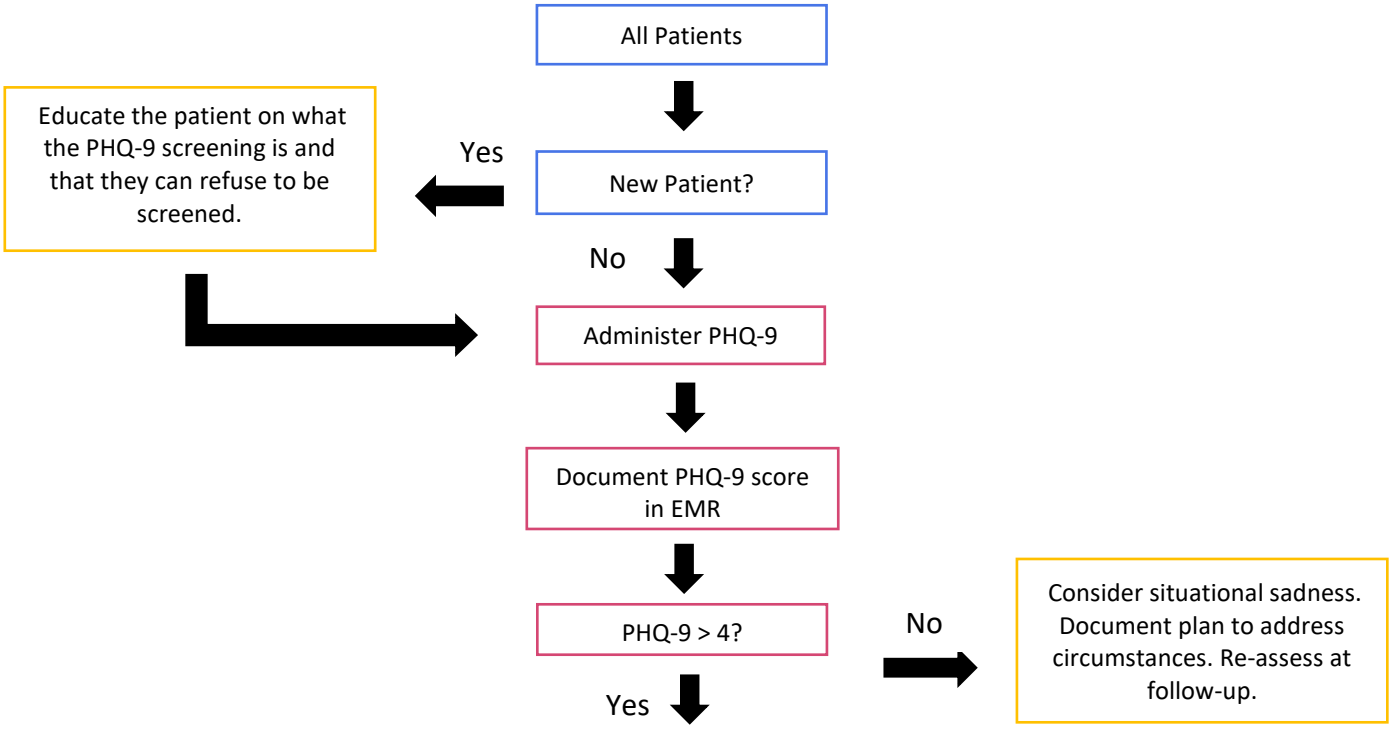
PHQ-9 Score Severity and Treatment Recommendations

Score	Severity	Proposed Treatment Actions
0-4	None-minimal	None
5-9	Mild	Watchful waiting; repeat PHQ-9 at follow-up
10-14	Moderate	Treatment plan, considering counseling, follow-up and/or pharmacotherapy
15-19	Moderately Severe	Active treatment with pharmacotherapy and/or psychotherapy
20-27	Severe	Immediate initiation of pharmacotherapy and, if severe impairment or poor response to therapy, expedited referral to a mental health specialist for psychotherapy and/or collaborative management

Note. “Unipolar depression in adults and initial treatment: General principles and prognosis” by Simon, G, 2019, UpToDate, table 1. Retrieved from https://www-uptodate-com.ju.idm.oclc.org/contents/unipolar-depression-in-adults-and-initial-treatment-general-principles-and-prognosis?search=PHQ-9%20severity%20score&source=search_result&selectedTitle=5~150&usage_type=default&display_rank=5#H84009457

Appendix E

Depression Screening and Management Algorithm



Score Range	Recommended Treatment
5 – 9 Mild	- Watchful waiting. Repeat PHQ-9 at follow-up in four weeks - Mental health counseling - Rule out conditions that mimic depression IE. Hypothyroidism
10 – 14 Moderate	- Any of above - Start pharmacotherapy and/or psychotherapy - Adjust or add medication - Two-week follow-up after initiation or adjustment of of pharmacotherapy - Four-week follow-up after initiation of psychotherapy
15 – 19 Moderately severe	- Any of above
20 – 27 Severe	- Any of above - Appointment with psychiatrist and/or referral to behavioral health specialist

Suicidal Ideations

- Assess ability, intention, and validity of threat
- Suicidal ideations, plan, and ability to carry out plan → Hospitalization
- Suicidal ideations, plan or no plan, inability to carry out plan → Safety contract (Doc in EMR)

Note. Adapted from "Algorithm" by Veterans Affairs (VA) / Department of Defense (DoD), 2016, VA/DoD Clinical practice guideline for the management of major depressive disorder, pp. 15-16. Retrieved https://www.healthquality.va.gov/guidelines/MH/mdd/VADoDMDDCPGFINAL82916.pdf

Appendix F

PDSA Template

Project:

Team:

Change Idea:

Tasks:

Plan
What are we trying to accomplish? What are our goals? How are we going to measure the change? What are team member roles?
Do
Implementation: -
Study
Observations: - Results: - Lessons: -
Act: What changes are we going to make based on our findings?
Next Steps: Adapt by creating new Cycle, Adopt current Cycle, Abandon project entirely. -

Note. Adapted from "Project Planning Form" and "PDSA Worksheet" by Institute for Healthcare Improvement (IHI), 2020, *QI Essentials Toolkit*. Retrieved from http://www.ihi.org/resources/Pages/Tools/Quality-Improvement-Essentials-Toolkit.aspx

Appendix G

Audit Worksheets

Patient Demographics

Patient encounter #	Gender M/F	Age	Race
1			
2			
3			

Provider Demographics

Provider	Provider Type	Years of Experience
1		
2		
3		

PHQ-9, Depression Diagnosis and Treatment Plan Rate Data

Patient encounter #	PHQ-9 Y/N	Depression Diagnosis Y/N	Treatment Plan Y/N
1			
2			
3			

PHQ-9 Score Data

PHQ-9 Score	Baseline	Most Recent
1		
2		
3		

Appendix H

Revised Depression Attitude Questionnaire

	Please read the statement and tick/click the box that relates best to your personal opinion	Strongly Disagree	Disagree	Neither Disagree Nor agree	Agree	Strongly Agree
1	I feel comfortable in dealing with depressed patients' needs					
2	Depression is a disease like any other (e.g. asthma Diabetes)					
3	Psychological therapy tends to be unsuccessful with People who are depressed					
4	Antidepressant therapy tends to be unsuccessful With people who are depressed					
5	One of the main causes of depression is a lack of self-discipline and will-power					
6	Depression treatments medicalize unhappiness					
7	I feel confident in assessing depression in patients					
8	I am more comfortable working with physical illness than with mental illnesses like depression					
9	Becoming depressed is a natural part of being old					
10	All health professionals should have skills in recognizing and managing depression					
11	My profession is well placed to assist patients with depression					
12	Becoming depressed is a way that people with poor stamina deal with life difficulties					
13	Once a person has made up their mind about taking their own life no one can stop them					
14	People with depression have care needs similar to other medical conditions lie diabetes, COPD, or arthritis					
15	My profession is well trained to assist patients with depression					
16	Recognizing and managing depression is often an important part of managing other health problems					
17	I feel confident in assessing suicide risk in patients presenting with depression					
18	Depression reflects a response that is not amenable to change					
19	It is rewarding to spend time looking after depressed patients					
20	Becoming depressed is a natural part of adolescence					
21	There is little to be offered to depressed patients who do not respond to initial treatments					
22	Anyone can suffer from depression					

Note responses ranked with Likert scale: Strongly Agree = 5, Agree = 4, Neutral = 3, Disagree = 2, Strongly Disagree = 1

Appendix I

R-DAQ Scale Permission

SPRINGER NATURE

The development and psychometric properties of a measure of clinicians' attitudes to depression: the revised Depression Attitude Questionnaire (R-DAQ)

Author: Mark Haddad et al
Publication: BMC Psychiatry
Publisher: Springer Nature
Date: Feb 5, 2015

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BACK CLOSE WINDOW

Appendix J

Project Power Point Presentation

See separate attachment

[Not included in Sigma Repository submission.]