2020

Depression Screening in Outpatient Neurology

Lakicia Foster
Nova Southeastern University

DEPRESSION SCREENING IN OUTPATIENT NEUROLOGY

Presented in Partial Fulfillment of the
Requirements for the Degree of
Doctor of Nursing Practice

Nova Southeastern University
Health Professions Division
Assaf College of Nursing

Lakicia Foster

2019

NOVA SOUTHEASTERN UNIVERSITY

HEALTH PROFESSIONS DIVISION

THE RON AND KATHY ASSAF COLLEGE OF NURSING

This project, written by Lakicia Foster under the direction of Dr. Lori Lupe, Project Chair, and approved by members of the project committee, has been presented and accepted in partial fulfillment of requirements for the degree of

DOCTOR OF NURSING PRACTICE

PROJECT COMMITTEE

Lori A. Lupe DNP, CCRN-K, NEA-BC 1/15/20

Faculty Name, Credentials Date

Chair of DNP Project Committee

NOVA SOUTHEASTERN UNIVERSITY

HEALTH PROFESSIONS DIVISION

THE RON AND KATHY ASSAF COLLEGE OF NURSING

Certification

We hereby certify that this DNP Project, submitted by Lakicia Foster, conforms to acceptable standards and is fully adequate in scope and quality to fulfill the project requirement for the Doctor of Nursing Practice degree.

Approved:

Stefanie La Manna — 1/27/20

Stefanie La Manna PhD, MPH, APRN, FNP-C, AGACNP-BC — Date

Director, DNP and PhD Programs

Marcella M Rutherford — 1/27/20

Marcella M. Rutherford, PhD, MBA, MSN — Date

Dean, College of Nursing

Abstract

Depression is the preeminent cause of disability internationally. Support-based depression screening is a nationally recommended means of detecting and treating patients with this disabling illness. The purpose of the doctor of nursing practice (DNP) practice change project was to implement an outpatient neurology depression screening protocol so that depressed patients were identified and received intervention. The project answered whether implementation of an 8- to 12-week systematic depression screening protocol in a neurology practice increased the incidence of accurate depression identification and treatment in this patient population as compared to the 3-month prior baseline. The DNP depression screening project was based on the salutogenic theoretical framework to emphasize the generation of health (Becker, Glasscoff, Felts, & Kent, 2015). This generation of health was accomplished through the preventative intervention of depression screening. The practice change project was based on an evidence-based practice design using quantitative data collection and measurements. In the DNP practice change project, $N = 66$ patients participated in systematic, support-based depression screening and received treatment recommendations compared to a baseline of 0 systematic depression screening, identification, and treatment. Of the $N = 66$, 56.1% ($n = 37$) of the patients screened positive for depression and 39.4% ($n = 26$) received treatment if indicated. Future studies were needed to determine the generalizability of the practice change protocol methods and results.

Acknowledgments

It is my esteemed honor to mention in gratitude the contributions of those who have supported me in the implementation of *Depression Screening in Outpatient Neurology* and the development of this manuscript. Dr. Nedd, you have been a generous supporter from the day we met. You are brilliant, and it has been a privilege learning under your guidance. Dr. Lori Lupe, thank you for your patient guidance and wise counsel as my chair. To my professors in the Nova Southeastern University College of Nursing Doctor of Nursing Practice Program, thank you for pushing me to strive for excellence. Dr. Henson-Evertz, thank you for being my advisor and a stalwart example of commitment to education and student success. Dr. Evans, thank you for being a firm support and guide along the way. Dr. Hardigan, thank you for your kind willingness to sit and clarify statistics with me throughout my DNP program and project. Dr. Bonnie Gnadt, thank you for all the time you spent poring over my data results with me. Dr. Sarira El-Den, thank you for your generosity in allowing me to use and adapt your Perinatal Depression Attitudes and Screening Acceptability Questionnaire (PASAQ) as part of my project. Thank you, Dr. Lee and Dr. Laing, for your content expert validation of my clinician knowledge questionnaire. To my Southwestern Adventist University family, thank you for all your support and prayers. To my siblings, thank you for enduring and encouraging me through the long process of manuscript writing. To my parents, I say endless thanks for all of your support, encouragement, and unfailing love through the DNP program and project. Most importantly, God, You have been my Inspiration, Hope, and Reason for all of the work I have done in this project. Thank you.

Table of Contents

List of Tables

List of Figures

Chapter One: Overview of the Problem of Interest

Depression is the number one cause of disability around the world (World Health Organization [WHO], 2018). An estimated 300 million people suffer from depression globally (WHO, 2018). Though effective treatment for depression exists, on average, less than half of those who are depressed receive treatment (WHO, 2018). Barriers to effective treatment have included an insufficient number of trained providers, incorrect assessment, misdiagnosis, and under-diagnosis (WHO, 2018). The purpose of this paper is to describe a doctor of nursing practice (DNP) practice change project that identified and provided treatment (i.e., neuropsychology referral, pharmaceutical prescription, other) if indicated for outpatients with neurological conditions who screened positive for depression. The purpose of this chapter was to introduce the background to the practice problem, theoretical framework, purpose, and objectives of the DNP practice change project.

Background: Definition and Depression

Depression is a mental health disorder with symptoms that may include sadness, anhedonia, feelings of worthlessness, changes in sleep or hunger, fatigue, and distractibility (WHO, 2019). Duration of the disorder may be acute or chronic (WHO, 2019). Mild depression may not require pharmaceutical intervention, but intermediate to severe depression can require interventions such as talk therapy and medications (WHO, 2019). The effects of depression can be debilitating, robbing the sufferer of the ability to function normally in his or her everyday life (WHO, 2019).

Background to the Problem

Chronic comorbidities are often caused by and lead to depression (Bulloch et al., 2015). Siu and the United States Preventive Service Task Force (USPSTF, 2016) identified depression

as among the primary causes of disability in persons over the age of 15. The USPSTF recommended that adults and postpartum women should be screened for depression (Siu & USPSTF, 2016). Their recommendations advised that screening should be systematic, including effective diagnosis, treatment, and follow-up (Siu & USPSTF, 2016). USPSTF recommendations noted that the extent of harm from depression screening was small, while there was moderate clinical benefit to support-based depression screening (Siu & USPSTF, 2016).

Significance of the Clinical Problem

The disease burden of depression has been internationally recognized (WHO, 2018). Systematic, support-based, depression screening was recommended to address the problem (Siu & USPSTF, 2016). Depression is a serious concern in patients with neurological conditions (Mayberg, 2016). Similarly, persons with mental illnesses have been considered to be at high risk for depression (Whooley, 2016). The outpatient population of the DNP practice change project was comprised of diverse patients with various neurological and mental illnesses. Because of the clinical concern of depression in patients with neurological and mental illnesses, the systematic, support-based depression screening of neurology outpatients in the DNP practice change project was significantly important (Mayberg, 2016; Whooley, 2016).

Problem Statement

Although neurology patients are at high risk for depression, the practice at the project site did not include an evidence-based depression screening and intervention protocol for identification and treatment of patients.

Purpose Statement

The purpose of the DNP practice change project was to implement an outpatient neurology depression screening protocol so that depressed patients were identified and received treatment recommendations.

Project Purpose

There has been national support for the screening of the general adult United States (U.S.) population for depression (Siu & USPSTF, 2016). According to practice recommendations, systematic depression screening included accurate depression diagnosis with appropriate treatment and follow-up (Siu & USPSTF, 2016). Accordingly, the DNP practice change project proposed to screen adult neurology patients using a depression screening protocol that combined screening utilization with subsequent treatment if indicated. The overall goal was achieved through the approximately 3-month implementation of a system-level depression screening protocol in an outpatient neurology clinic. One hundred percent of qualifying charts were reviewed for screening and treatment. Results were analyzed and reported to the stakeholders.

Project Objectives

The following objectives directed the DNP practice change project:

1. **Objective 1:** Establish the systematic depression screening baseline among the sample population.
2. **Objective 2:** Develop an evidence-based, systematic depression screening protocol at a neurology center in South Florida.
3. **Objective 3**: Implement the evidence-based depression screening protocol.

4. **Objective 4**: Evaluate the use of the systematic depression screening protocol through weekly chart audit.
5. **Objective 5**: Develop a plan of sustainability in the use of the systematic depression screening protocol at the neurology center in South Florida.
6. **Objective 6**: Disseminate the findings to the stakeholders.

Theoretical Framework

The USPSTF makes preventive care recommendations for populations that do not have signs of associated illness (Siu & USPSTF, 2016). In accordance with this USPSTF emphasis on preventive care regardless of symptoms, the DNP practice change project screened all eligible patient participants, including asymptomatic patients, for depression. The salutogenic model was selected as the theoretical framework for the DNP practice change project because the model emphasizes the generation of health instead of pathogenesis (Becker, Glasscoff, Felts, & Kent, 2015). In their discussion of salutogenesis, Becker et al. (2015) described that problem elimination was insufficient to produce good health outcomes. Becker et al. (2015) highlighted the need for building the capacity to attain good health outcomes. Becker et al.'s (2015) health generation philosophy promoted the creation of good health beyond the limitations of a disease-based model. They endorsed advocacy of a capacity-building model that promoted health, whether or not disease was actively present (Becker et al., 2015).

Theoretical Framework Constructs

The salutogenic model revolves around the Sense of Coherence (SOC) and General Resistance Resources (GRR) constructs (Mantas et al., 2015). SOC is characterized by comprehensibility, manageability, and meaningfulness (Mantas et al., 2015). According to Antonovsky (as cited in Super, Wagemakers, Picavet, Verkooijen, & Koelen, 2015), the SOC

and GRR constructs address the individual's sense of confidence based on three concepts: (a) individuals encounter internal and external environmental stimuli, (b) resources exist to manage the demands of these stimuli, and (c) the demands of these stimuli are deserving of the individual's attentive engagement. Antonovsky (as cited in Super et al., 2016) also explained that GRRs are internal attributes that an individual could use as resources to combat life tension in an effort towards health maintenance, failure at which leads to health breakdown. Health in this regard is seen as a continuum between the state of health-ease and dis-ease Antonovsky (as cited in Super et al., 2015).

Theory Application to the DNP Project

In the DNP practice change project, the salutogenic model influenced project objectives that consequently improved the neurology clinic's capacity to promote better, depression-related outcomes for neurology outpatients. Through project implementation, clinicians were educated about the impact of depression on the health of patients with neurological conditions. Clinicians were also trained to perform depression screening and understand the importance of treatment when indicated. Further, the practice change project provided mental health education though depression screening and treatment interventions to neurology outpatients. The DNP practice change project, therefore, had the potential to impact the health knowledge and decision-making of both patients and clinicians in regards to depression and health generation.

Significance of Evidence-Based Practice Project

Depression is a public health concern that is recognized as the most common cause of disability globally (WHO, 2018). The evidence-based DNP practice change project was significant because it combatted depression through the creation and implementation of a depression screening and treatment protocol. Furthermore, the evidence-based DNP practice

change project was specifically designed to screen for depression in patients with neurological conditions, a population of particular concern for depression (Mayberg, 2016)

Practice

In their report, Siu and the USPSTF (2016) identified that there was enough evidence to support the utility of adult depression screening. Walker et al. (2017) enumerated three defining characteristics of a successful screening program: (a) detection reliability, (b) achieves client endorsement, and (c) results in effective treatment for clients. These characteristics closely mirrored the goals of the DNP practice change project. Evaluation of the program also provided invaluable data regarding population impact and the sustainability of the protocol in neurology outpatient settings.

Healthcare Outcomes

Although depression is the preeminent cause of disability in the world, it has been estimated that in some countries, fewer than 10% of sufferers receive treatment for their depression (WHO, 2018). Among the barriers to effective treatment, such as stigma, was underdiagnosis of the illness (WHO, 2018). Implementation of successful depression screening protocols may help reduce the global burden of depression by improving healthcare outcomes through increased depression detection and intervention.

Healthcare Delivery

No single, universal algorithm for depression screening and treatment was found in the review of literature for the DNP practice change project. As such, the DNP practice change project may contribute to the body of literature and worldwide initiatives aimed at addressing depression and depression screening. Other examples of depression healthcare delivery programs included the WHO's mental health Gap Action Programme (mhGAP), which provided

increased access to mental health services and training manuals for lay workers (WHO, 2018). The DNP practice change project was in alignment with such humanitarian and clinical efforts, because one of the project's objectives was to improve the preparation of clinicians to effectively administer depression screening and provide patients with treatment if indicated by their results (WHO, 2018).

Healthcare Policy

Kellogg, Gainer, Allen, O'Sullivan, and Singer (2017) discussed steps to disseminating innovation at the intraorganizational level. The steps included creating organizational endorsement, information sharing, peer-peer training, reinforcement, and the process of scholarship and flexibility (Kellogg et al., 2017). The DNP practice change project used steps similar to those described by Kellogg et al. (2017) to encourage the neurology clinic to adopt the depression screening protocol as new organizational healthcare policy.

Summary of Chapter One

Depression is the premier cause of disability around the world, highlighting its public health importance (WHO, 2108). Siu and the USPSTF (2016) have made significant recommendations to the medical and U.S. community that systematic depression screening with supportive services is a beneficial modality for depression identification and treatment in adults. The DNP practice change project proposed to implement a systematic depression screening protocol, including screening of adult neurology patients using the Patient Health Questionnaire 9 Item (PHQ-9) screening instrument, clinician training to administer, score, and validate the PHQ-9, and provision of treatment if indicated.

The salutogenic model of health promotes health generation instead of following a pathological model (Becker et al., 2015). The support-based, depression screening protocol

implemented in the DNP practice change project helped patients to maintain or achieve health through depression screening and score-appropriate intervention (Becker et al., 2015; Antonovsky, 1987 as cited in Super et al., 2015). The DNP practice change project also demonstrated potential to impact improvement in depression-related patient outcomes, healthcare delivery by training clinicians to screen for depression, and the development of depression screening as organizational policy.

Chapter Two: Review of the Literature

Depression is a recognized global and national public health problem (WHO, 2018; Siu & USPSTF, 2016). Effective, systematic depression screening and follow-up care have been recommended for addressing the crisis (Siu & USPSTF, 2016). The purpose of this review was to examine the literature regarding the public health concern of depression, the use of systematic depression screening in outpatient settings, and best practice recommendations for the implementation of accurate depression screening with appropriate follow-up care among neurology patients.

Search Engines and Terms

The search engines used in the DNP practice change project were Google Scholar, CINAHL, and Science Direct. Key search terms and phrases were “depression,” “depression screening,” “depression prevalence,” “depression screening in outpatient neurology,” “ U.S. Preventive Service Task Force,” “salutogenic model,” “Aaron Antonovsky,” “applying the salutogenic model,” “depression screening and policy reform,” “depression in neurology patients, PHQ-9,” “using the PHQ-9,” “reliability and validity of the Spanish PHQ-9,” “resident training depression screening program,” “the PHQ-9 and neurology outpatient,” “patient health questionnaire-9,” and “assessing validity of a depression screening instrument.” All Science Direct queries were between the years of 2014 and 2019. The CINAHL queries “depression screening and policy” and “patient health questionnaire-9” were between the years of 2014 and 2019. All other CINAHL and Google Scholar searches were between the years of 2014 and 2018.

Article Review and Selection

Forty-eight articles were reviewed. Fourteen articles in total were selected after abstract or manuscript review. Twelve articles were selected from original queries. One article, Whooley (2016), was selected secondarily. Another article, Carey et al. (2014) was selected after reviewing it as a citation found in Schaeffer and Jolles (2018).

Literature Review Findings: Study Types & Study Summaries

Articles ranging from Level I to Level VII were selected for inclusion in the literature review. No Level II or Level V articles were used. Findings were discussed according to article level. Strengths, weaknesses, contradictions, and gaps in the literature were also reviewed.

Level I

The Siu and USPSTF (2016) report was a Level I systematic review. The study synthesized evidence from various sources in recommendation of depression screening. It was the only Level I article in this review.

Level III

Carey et al. (2014) conducted a Level III quasi-experimental design study. Their work compared PHQ-9 screening tool results to providers' judgement in the detection of depression. Sensitivity and specificity of both forms of screening were also compared. Results demonstrated similar percentages of detection prevalence but widely differing sensitivity and specificity between the two. This article was the only Level III study in this review.

Level IV

Two articles were Level IV descriptive correlational analyses. Mantas et al. (2015) performed an observational, transverse, non-experimental, quantitative study (p. 36). Their work investigated the positive mental health of mental health professionals through the use of the

Sense of Coherence and Positive Mental Health (PMH) questionnaires. Instrument results were stratified across diverse variables, including demographic characteristics. The PMH and the salutogenic Sense of Coherence constructs were the primary, underlying theoretical frameworks of Mantas et al.'s study.

The work of Schaeffer and Jolles (2018) described a cyclical quality improvement process. Their initiative quantified improvement in depression screening and follow-up of their population over 90 days. Elements of the process were systematically repeated to document trends.

Level VI

Two Level VI descriptive studies were included in the review. One was performed by Walker et al. (2017). In their work, they described their screening implementation program. The expressed intention of their publication was to elucidate lessons they learned in the process. These lessons included that prudence is important in deciding how often to screen patients; screening should be an organized, staffed, procedural process; and clinician engagement in the screening process is vital to encourage patient participation (Walker et al., 2017).

Bulloch et al. (2015) conducted a cross-sectional descriptive study. The objective of the study was to determine the prevalence of depression across ten neurological presentations. Their study results reflected that persons with a history of traumatic brain injury or central nervous system tumors had the chief point prevalence of depression.

Level VII

The eight remaining articles were editorial or topic authority Level VII works. Whooley (2016) discussed the 2009 USPSTF recommendations regarding screening for depressed adults. Whooley (2016) highlighted that the predominant change between the 2009 and 2016 reports is

the more extensive 2016 discussion of depression in pregnant women. Mayberg's (2016) editorial, on the other hand, reviewed the 2016 USPSTF recommendation on depression screening and possible contributions that neurology can make to help innovate depression screening. The WHO (2018) fact sheet provided an overview of the global problem of depression across all ages and the need for intervention. Blackwell and McDermott (2014), Beard, Hsu, Rifkin, Busch, and Bjorgvinsson (2016), and Gelaye et al. (2014) all discussed the PHQ-9 at length.

Becker et al. (2015) and Super et al. (2015) discussed the salutogenic model of health. Becker et al. (2015) expertly illustrated how the salutogenic model of health related to concepts of health promotion, prevention, disease, and other theories (Becker et al., 2015). Super et al. (2015) described health promotion in the context of patient empowerment and the salutogenic construct of Sense of Coherence.

Literature Review Synthesis: Significant Findings

A significant finding from this review of the literature was that eight of the 14 articles promoted depression screening in some way. A ninth article by Super et al. (2015) supported screening of mental health workers to determine their state of positive mental health, which is conceptually similar to depression screening. The repeated support in the literature for depression screening and mental health underscores the importance of the topic of depression screening. Mantas (2015), Becker et al. (2015), and Super et al. (2015) discussed health achievement through some context of salutogenesis.

The use of screening tools was another recurring theme in the literature review. Six articles specifically supported the use of systematic depression screening with follow-up care in the clinical setting (Siu & USPSTF, 2016; WHO, 2018; Mantas, 2015; Mayberg, 2016; Schaeffer

& Jolles, 2018; Whooley, 2016). Again, the benefit and importance of screening is related to depression-associated morbidity and suicidality (WHO, 2018). Three of the six articles supported using a variation of the PHQ-9 in depression screening (Mantas, 2015; Mayberg, 2016; Whooley, 2016). Bulloch et al. (2015) used the PHQ-9 to estimate point prevalence data. According to Bulloch et al. (2015), their work reflected the heavy illness burden of depression in people with neurological conditions (Bulloch et al., 2015).

The importance and role of mental health clinicians and professionals in depression screening, interventions, and general mental health recurred in the literature as well (Carey et al., 2014; Mantas, 2015; Mayberg, 2016; Schaeffer & Jolles, 2018; Siu & USPSTF, 2016; Walker, 2017; WHO, 2018). Four studies—Carey et al. (2014), Schaeffer and Jolles (2018), Siu and the USPSTF (2016), and Walker (2017)—discussed aspects of training or using techniques to better engage clinicians and mental health professionals in the process of accurate depression screening. The WHO (2018) also discussed programs that involved manuals and lay worker training to improve service access for depressed individuals.

Literature Strengths and Weaknesses

A significant weakness of this literature review was the paucity of articles, other than Bulloch et al. (2015), directly referring to depression in people with neurological conditions. Another weakness of the literature reviewed was that each study population was so different. The variation in study populations made it difficult to generalize study findings to the largely Hispanic, outpatient neurology population of the DNP practice change project.

Literature Gaps

The literature review also presented gaps about depression and depression screening in the existing literature. Mayberg (2016) expressed concern regarding whether sufficient resources

existed to address depression screening needs. Cost and funding for depression may be an important aspect of future study. Mayberg (2016) also suggested that electrical stimulation to better understand mood regulation is underutilized.

Schaeffer and Jolles (2018) explicitly identified lack of provider knowledge in appropriate depression care as a distinct gap in best practice. Their sentiment was echoed somewhat by Walker et al. (2017) who identified that engaging providers in the depression screening process can be challenging. WHO (2018) training of lay workers to fill the depression services gap was a supportive example of Walker et al.'s (2017) description of insufficient clinician engagement in depression care.

Another challenge of best practice in depression screening may be the lack of culturally diverse screening programs and methods. Of the 14 articles, only Schaeffer and Jolles (2018) described a program fit for a multicultural system. This was a severe limitation for countries such as the U.S. that serve diverse populations. Siu and the USPSTF (2016) also noted the need for more research on the verity of screening tools other than English and Spanish as a practice gap.

Finally, Schaeffer and Jolles (2018) identified that according to Medicaid, although depression screening was nationally supported, only seven states actually report this important screening and follow-up information. This stated evidence underscored the importance of systematic, accurate, effective depression screening with appropriate, subsequent intervention. No specific universal, standardized, depression screening system was recommended or recurrent in the literature review. There was a critical paucity of standardized, evidence-based, systematic depression screening in outpatient, adult neurology in the literature reviewed.

Summary of Chapter Two

Fourteen sources were explored in the literature review. Authoritative support for depression screening, training populations and clinicians involved in depression screening, types of screening tools, identification of challenges to effective screening, and practice gaps were discussed. Strengths, weaknesses of the review, and contradictions in the literature were also discussed in the article.

Chapter Three: Methodology

An estimated 20 million people live with depression in the U.S. (MentalHealth.gov, 2017). Depression occurs more frequently in patients with neurological conditions than in the overall population (Kanner, 2018). Implementation of standardized depression screening and evidence-based therapies are crucial, initial actions to improve outcomes for patients who suffer from depression (Mayberg, 2016). The purpose of the DNP practice change project was to implement an outpatient neurology depression screening protocol so that depressed patients were identified and received treatment if indicated. The protocol was implemented in a South Florida neurology clinic for adult outpatients with neurological conditions. The purpose of this chapter was to discuss the project design, recruitment process, sample characteristics, and data analysis plan for the DNP practice change project.

Project Design

The DNP practice change project was an evidence-based protocol that collected quantitative data. The collection of quantifiable and numerical data for analysis was fundamental for the evaluation of project outcomes. Important quantitative features of the project design included patient demographics, counts of completed PHQ-9 questionnaires, PHQ-9 raw scores, counts of different treatment recommendations, and scores on clinician pre- and post-training tests. Training and qualifying clinicians to administer the PHQ-9 was another important aspect of the EBP project design.

Setting

The DNP practice change project was conducted with neurology outpatients during their doctor's visits at a South Florida neurology clinic. Several steps in the depression screening process occurred in the examination room, including the consenting of patients to participate,

PHQ-9 administration and scoring, score validation, and the delivery of treatment if indicated. The examination room was an appropriate place for depression screening and treatment recommendations because it was an unmanipulated environment that was customary to patients' examination experience (Gray, Grove, & Sutherland, 2017).

Project Participants

Adult neurology outpatients from a South Florida neurology clinic comprised the patient sample population of the DNP practice change project. Patients who met inclusion criteria were recruited to participate in the project, when they arrived for their doctor's appointment, by convenience sampling methods. Patients' demographics varied by race, ethnicity, age, gender, occupation, and diagnosis. Due to the location of the clinic, a large Hispanic representation in the patient sample population was anticipated. Clinician participants (medical attendings, medical residents, medical students, and nursing students) were also recruited by convenience sampling for protocol training during their rotation days at the neurology clinic. Approximately six to 20 clinicians were initially projected to be involved in the protocol training.

Inclusion and Exclusion Criteria

Patient participants were adults 18 years of age or older, English or Spanish speaking, and literate or able to comprehend and appropriately answer PHQ-9 questions read to them. Patient participants also had to pass a pre-screening test (orientation to person, place, and date) to demonstrate that they were cognitively able to give consent. Patients were invited to provide or deny consent for their de-identified screening results, demographic information, and diagnosis to be included in project data reporting and associated publications. Patients who were unable to voluntarily participate in the depression screening protocol, to consent to allow someone else to write or verbalize their answers for them, or to give their consent due to neurological, medical, or

physical limitations were excluded from the project. Submissions from patients who did not complete the screening process were also excluded from the project.

Recruitment

Rathore et al. (2016) discussed the value and importance of screening for depression in primary and secondary care settings. Accordingly, the neurology clinic provided an appropriate setting for participant recruitment and project implementation. Patients were invited to participate in the DNP project during their routine doctor's visit. Administration and scoring of the PHQ-9 questionnaire was assimilated into each patient's customary assessment interview.

Sample Participation

Participating patients were introduced to the program during their scheduled neurology appointments. Patient education about depression was made available in the examination room for all patients. Those patients who were eligible to participate in the project received a participant packet, which included an explanation of the project and a statement of confidentiality. Participants could review the packet while they were waiting to see the doctor in the examination room. During their assessment interview with the clinician, patients were given an opportunity to ask questions and give informed consent for voluntary project participation.

PHQ-9 Data Collection Procedures

The PHQ-9 has been used in the diagnostic screening of patients for depression (Beard et al., 2016; Gelaye et al., 2014). The PHQ-9 questionnaire may be found in Appendix J. The PHQ-9 is valid, with strong study reliability, Cronbach's alpha of .89 and .86 (Blackwell & McDermott, 2014). In using the instrument, patients reported and self-rated the symptoms they experienced in at least the past 2 consecutive weeks (Blackwell & McDermott, 2014; Moriarty, Gilbody, McMillan, & Manea, 2015). Patient self-reports totaled to a specific score. That score

was then interpretable as both a diagnostic and severity measure (Beard et al., 2016; PHQScreeners & Pfizer, n.d.). A recommended ideal depression detection range on the PHQ-9 was a score ≥ 10 (Blackwell & McDermott, 2014). Sufficient specificity and sensitivity to detect depression using the PHQ-9 could be accomplished by using a baseline detection range of 10 or greater.

Instrumentation: The PHQ-9 Severity Score and Treatment Algorithm

PHQ-9 scores indicated depression severity and were used to guide recommended intervention (PHQScreeners & Pfizer, n.d.). Scores ≤ 4 received no treatment (PHQScreeners & Pfizer, n.d.). Scores in the range of 5-9 indicated mild severity and recommendation for follow-up or close observation (PHQScreeners & Pfizer, n.d.). Scores ranging from 10-14 suggested moderate depression severity and were accompanied by suggested treatment recommendations such as counseling, follow-up, or medication intervention for the patient. Scores of intermediate severity, 15-19, warranted psychotherapy and medication intervention (PHQScreeners & Pfizer, n.d.). Finally, PHQ-9 depression screening scores ranging from 20-27 indicated that the patient needed immediate medication intervention and interdisciplinary management or psychotherapy if they responded poorly to more traditional therapy (PHQScreeners & Pfizer, n.d.). Participant scores were completed on paper and scanned directly into the electronic medical record (EMR), where they could later be abstracted and analyzed.

Analyzing the Protocol: Clinician Training Data

Prior to implementation of the PHQ-9 in the patient population, all medical providers who were involved in the screening and intervention process underwent approximately 20 minutes of training to orient them to the significance of depression screening in the population, the PHQ-9 instrument, the treatment algorithm, their responsibility to validate screening results,

and how to correctly document all important information related to the screening (i.e., screening score, provider validation, treatment recommendations provided according to the PHQ-9 treatment-score algorithm). The training also included a 10-question pre-training and post-training survey to assess medical provider knowledge acquisition and practice of the protocol. Careful adherence to the protocol was crucial to maintain the integrity of the study data generated, collected, and analyzed. This adherence to consistency and standardization of the administration, algorithm interpretation, and treatment delivery between all medical providers was integral to the reliability of the evidence-based project results.

The clinician pre-training and post-training survey consisted of 10 questions, including five knowledge and five attitude questions. The pre- and post-training survey may be found in Appendix C. The five knowledge questions were based on information providers should be able to identify regarding the PHQ-9 questionnaire. These questions were validated by two content experts. The five attitude questions were adapted from the Perinatal Depression (PND) Attitudes and Screening Acceptability Questionnaire (PASAQ) with permission from the lead researcher, Dr. Sarira El-Den (El-Den, O'Reilly, & Chen, 2018). See Appendix L for the permission letter. The PASAQ tool was originally created and used to ascertain the attitudes of pharmacists regarding PND depression screening (El-Den et al., 2018). Five questions from the PASAQ were selected and adapted to refer to depression and clinicians in language that was more general than the original pharmacist-focused PASAQ. Clinician participants self-selected one anonymous, unique, bivariate code, which they supplied on both their pre-training and post-training surveys. The code would be the same on both surveys, allowing each clinician's pre-training and post-training survey results to be anonymously linked and compared for changes in clinician

knowledge or attitude. The bivariate code consisted of the clinician's favorite color and first three initials of their high school.

PHQ-9 Administration

The PHQ-9 instrument was administered by a qualified medical provider (Blackwell & McDermott, 2014). Qualified in this context referred to clinician participants who underwent the protocol training for PHQ-9 administration and scoring. The PHQ-9 was also available in Spanish (Familiar et al., 2014). For the purposes of the DNP practice change project, the validated English and Spanish versions of the PHQ-9 were used. This bilingual option minimized barriers to patients understanding the instrument. After a patient completed the PHQ-9, the score was validated by the lead neurologist, taking into account relevant patient history and comorbid conditions (Blackwell & McDermott, 2014; Corson, Gerrity, Dobscha, 2004 as cited in Blackwell & McDermott, 2014).

PHQ-9 and Data Collection

The patient population of the South Florida neurology clinic was diverse. A large subset of Hispanic patients understood, spoke, and read fluent English, Spanish, or both. The PHQ-9 was implemented in a variety of ethnologically and racially diverse primary care, patient populations (Gelaye et al., 2014). This diverse application of the PHQ-9 made it an appropriate screening tool for the socio-ethnically diverse patient sample of the DNP practice change project. These diverse dynamics also provided an opportunity to collect demographic-rich data. Data collected in the DNP practice change project was analyzed using Statistical Package for Social Sciences (SPSS) software and other appropriate modalities as needed.

Descriptive Data Analysis

Descriptive data analysis in the DNP practice change project provided information to better understand the characteristics of the sample population and their depression screening results. Due to small participant sample sizes and incomplete clinician training data, inferential statistics could not be provided. Descriptive statistics, such as incidence, were discussed.

Nominal and Demographic Data

The demographic characteristics initially selected for analysis were patient occupations, age, ethnicities, race, gender, and neurological diagnoses. Patient occupation categories included medical, engineering, trade work, labor law enforcement, retired, student, disabled, and other. Race was defined as White, Black/African American, American Indian, Alaska Native, Asian, and Native Hawaiian/Pacific Islander (United States Census Bureau, 2017). Ethnicity primarily included Hispanic and Not-Hispanic (United States Census Bureau, 2017). Hispanic consisted of Puerto Rican, Cuban, Cuban-American, and other Hispanic. Neurological diagnoses were indicated by International Classification of Disease, Tenth Revision (ICD-10) codes.

Descriptive and Inferential Statistics

Counts and percentages of the sample population were categorized by age, gender, race, ethnicity, occupation, and primary ICD-10 neurological diagnosis. Percentages and counts of the PHQ-9 depression raw scores, score ranges, functional difficulty, and treatment recommendations results were also stratified by age, gender, race, ethnicity, and primary ICD-10 neurological diagnosis. Due to small sample size, inferential statistics were not applicable to the DNP practice change project, but incidences were utilized and reported. Patient counts according to each of the following was collected: raw score number, demographic category, self-reported score range, self-reported level of functional difficulty, and type of treatment recommendation

category was collected. These collected counts were organized in Excel and SPSS. Then the counts were analyzed in SPSS for descriptive statistics, such as incidence and percentage. Bivariate descriptive analyses comparing each category of patient demographics (i.e., race, age, gender) to raw PHQ-9 depression score, score range, treatment recommendations, or functional difficulty were then performed in SPSS.

Paired *t*-Test

The number of clinician participants who completed the training was also quantified. Collection of linkable pre-training and post-training test results was planned but not possible due to incomplete data. Paired *t*-test analysis would have been used to evaluate the five knowledge questions. The goal of comparing clinician pre-training and post-training tests was to determine if clinician knowledge and attitudes regarding screening patients with neurological conditions for depression and the PHQ-9 instrument changed after training and protocol participation.

Data Management and Storage

Patient Health Questionnaire-9 item scores along with related descriptive data were collected and stored. Due to incomplete pre-training and post-training test results, inferential data was not possible. Data from the provider pre-and-post-training test results were incomplete, but recorded and stored. Completed paper PHQ-9 questionnaires were scanned immediately into the EMR. See the consent form as Appendix F.

Data Collection Time Frames

Data collection occurred in several time frames. Each PHQ-9 survey could take approximately 5 minutes for patient completion (Blackwell & McDermott, 2014). The amount of time provided for each patient to complete their PHQ-9 was adjusted to accommodate patient test-taking needs. Validation of PHQ-9 results by the lead neurologist discretionarily have taken

a minimum of a few minutes upwards to approximately 1 hour. PHQ-9 administration occurred during doctor visits with the lead neurologist on days when appointments were available in the neurology clinic. The entire implementation and collection process took place over an approximately 3-month period from May 2019 through August 2019.

Ethical Considerations

Best practice for adult depression screening includes support systems for accurate identification and treatment of depression (Siu & United States Preventive Service Task Force [USPSTF], 2016). Prudent clinical care should also reflect ethical decision making (Hsin & Torous, 2016). Depression screening best practice should also be ethical. The ethical considerations related to the DNP practice change project included principles of ethics, issues of consent, scientific benefit, and security measures for study participants and data collection.

Health Insurance Portability and Accountability Act of 1996

The Health Insurance Portability and Accountability Act of 1996 (HIPAA) Privacy Rule was adhered to in the DNP practice change project. HIPAA accountability was particularly important in regards to the use of the EMR in the practice change project. The HIPAA Privacy Rule outlined the stipulations by which protected health information may be utilized or disclosed for studies (U.S. Department of Health & Human Services [HHS], 2018. Regarding research, HIPAA ensured that researchers have access to needed study data while protecting identifiable patient information (HHS, 2018). HIPAA law also specified precisely which data items must be removed from protected health information to ensure that utilized information was de-identified and unlinkable to the individual source (Polit & Beck, 2017). Full adherence to the Privacy Rule was expected of all clinicians and staff involved in the project at all times.

Confidentiality and Consent

Practicing patient confidentiality is a demonstration of respect for a patient's autonomy and their trust in their provider's discretion (Saunders, 2016). Anonymity and disclosure were also aspects of confidentiality (Saunders, 2016). For instance, confidentiality assumes patient awareness that sharing on their part is an expectation congruent with their role as a participant in their own healthcare (Saunders, 2016).

Medical literature recommended attainment of patient consent regardless of anonymity (Saunders, 2016). In the DNP practice change project, patients were provided with an explanation of the program and an invitation to participate in the depression screening protocol. Patient participants also had the right to informed consent to their participation in the depression screening process, data collection, and data publication. Informed consent implies a process in which the patient is informed regarding their health condition and treatment options as part of an ongoing dialogue between the provider and the client (Farmer & Lundy, 2017). Anonymity and publication of de-identified data was guaranteed in the patient consent process. The consent form can be found as Appendix F of this manuscript. Participating clinicians also received an opportunity to be informed about the depression screening protocol, their role in it, and their right to voluntary consent to participate in the screening process and permit the publication of their de-identified pre-training and post-training test results.

Beneficence

Beneficence reflects the benefit-harm ratio in EBP and research (Hofmann & Stanak, 2018). Beneficence represents the delicate balance between maximizing benefits to patients, while minimizing the risks associated with those same benefits (Bonney, 2014). Beneficence is also a part of informed consent (Roberts & Kim, 2018). It is the responsibility of researchers to

make sure that patients feel that their participation in a study is of their own free will (Roberts & Kim, 2018). Coercion works opposite to this goal of patient freedom, including freedom from harm and freedom to participate (Roberts & Kim, 2018). Beneficence was demonstrated in the DNP practice change project because patients who were identified as depressed were given the benefit of treatment recommendations, at little risk of harm to themselves or participants who screened negative for depression.

Fidelity and Non-Maleficence

Fidelity indicates how closely project implementation follows the intended implementation design (CDC, 2018). Non-maleficence reassures patients that they will not be harmed in the process of receiving care or during an intervention (Bonney, 2014). The DNP practice change project did not include any component that could physically harm patients in the process of completing the PHQ-9. Regarding fidelity, careful adherence to the project design and protocol process was imperative for participant safety and project continuity. Provider validation and correct utilization of the score-related treatment algorithm minimized the risk of incorrect diagnosis and potentially harmful results for patients.

Data Storage and Data Security

PHQ-9 instruments, results, and demographic data were securely stored in the medical record. Completed paper PHQ-9s was scanned into the EMR for reference and retrieval. The DNP student or the clinician evaluating the patient also manually input the PHQ-9 data into the patient's EMR visit report. To protect patient confidentiality and the integrity of the data, modification of the data was restricted in access to clinic staff only. Statistical analysis of the data was conducted and stored on the DNP student's password-protected computer. This

information was also backed up on a locked universal serial bus (USB) flash drive that remained in the possession of the DNP student.

Scientific Benefits

The DNP practice change project could also be considered an evidence-based quality improvement (EBQI) initiative. EBQI is defined as a methodical, multi-faceted implementation approach that links scientific discovery and clinical EBP through the collaboration of researchers, leaders, and clinicians (Goldstein et al., 2018). Through depression screening, this practice change project applied EBP and interprofessional collaboration to improve health outcomes for neurology outpatients in a South Florida outpatient neurology clinic.

Expected Outcomes

The ultimate goal of the DNP practice change project was to implement a depression screening protocol for outpatients with neurological conditions in a South Florida neurology clinic. Duration of the practice change project was approximately 3 months. Success of the practice change project was measured by depression identification and treatment recommendation for at least one patient.

The objectives and corresponding expected outcome measures of the DNP practice change project were as depicted in Table 1.

Table 1

Summary of Objectives and Outcomes

Objective	Outcome
Objective 1: Establish the depression screening baseline among the sample population.	Documentation of the systematic depression screening baseline

Objective 2: Develop an evidence-based, systematic depression screening protocol at a neurology center in South Florida.	Creation of a support-based protocol that consists of screening tool utilization, clinician validation of tool results, provision of score-specific intervention, and provider training on the overall process (Siu & USPTF, 2016)
Objective 3: Implement the evidence-based depression screening protocol.	Success of the practice change pilot will be measured by completion counts of PHQ-9 screening in the sample population as well as provider pre- and post-tests.
Objective 4: Evaluate the use of the systematic depression screening protocol through weekly chart audit.	A spreadsheet will be used to organize and reflect the weekly counts of sample population depression screening as well as new provider trainings and pre-tests or existing provider post-tests
Objective 5: Develop a plan of sustainability in the use of the systematic depression screening protocol at the neurology center in South Florida.	The sustainability plan will include an estimated annual budget, equipment needed to continue the program, EMR updates or programming that must be maintained, training tools and a clear training program, and provider buy-in
Objective 6: Disseminate the findings to the stakeholders.	A program analysis including counts of depression screening, interventions, comparative analytics of the sample population scores and demographics, statistical analysis of the provider training per the pre and post test results as training efficacy measure, budget data, and unexpected findings was supplied to the stakeholders.

Note. Side-by-side list of each objective and corresponding expected outcome.

Timeline of Project Phases

Step one was to determine whether support-based, systematic depression screening including the utilization of a screening tool was occurring at the neurology clinic. A needs assessment was completed. The needs assessment demonstrated that no systematic evaluation and screening tool was being used in the neurology clinic's practice to identify and treat

depression according to national best-practice recommendations. A baseline was established of 0 system-wide, support-based, routine depression screening of all neurology outpatients at the neurology clinic. This step was completed by August 28, 2018.

The second step in the process was to develop an overview of the protocol and its purpose. The protocol proposed to preventatively screen all eligible patients for depression in an effort to maximize health in the neurology patient population. Clinician participants used a standardized depression screening tool, the PHQ-9, to identify depression and inform treatment if indicated (i.e., referral, treatment, or follow-up) in consenting, adult, neurology patients. The selected depression detection and screening instrument was the PHQ-9. Patients were only screened once during the protocol implementation. The overall project plan was presented to primary stakeholders for approval and feedback. The protocol development process took place over approximately 8-16 weeks and was completed by January 28, 2019.

Obtaining organizational approval from the neurology clinic's operating manager for the implementation of the depression screening protocol in a representative sample of the neurology outpatients was the third step. Specifically, protocol implementation in a sample of the lead neurologist's patient population was requested. Approval was secured from the inception of concept development for the project and was achieved by August 28, 2018.

In the fourth step, IRB approval was obtained to implement the DNP practice change project. IRB approval took approximately 4 weeks. Approval was secured before May 6, 2019.

The fifth step, protocol implementation, was conducted from May 6, 2019 to August 1, 2019. The training program for the residents, medical students, and lead provider was conducted first. The provider training consisted of (a) a depression screening pre-training survey, (b) provider education to review current statistics and severity of depression in the general

population and in neurology in particular, (c) review of national recommendation for standardized depression screening and follow-up in the general population, (d) introduction to the screening instrument and administration best practice, and (e) step-by-step demonstration and explanation of how providers would use the screening tool and report results in the medical record.

According to clinic practice, residents and medical students initiated patient assessment interviews. Next, the lead neurologist continued each patient examination. A first line of defense for success of the DNP practice change project was educating clinicians about the depression screening procedures and securing their adherence to the protocol. Collaboration with the residents' coordinator on protocol development was important to facilitate the education and training of the residents and students. Key teaching points, group learning styles, the most effective way to teach the residents and students, and securing the time to teach the residents and students were discussed with the resident coordinator. The DNP student used insights from these discussions in the creation of the depression screening training for clinician participants.

The key facets of the clinician depression screening training included approximately 20 minutes of interactive introduction to the protocol, relevance of depression screening, and completion of a sample screening. Training of a single group of clinician participants took up to a day, including guiding the clinician participants through their day of depression screening. Otherwise, training was variable and repeated throughout the protocol implementation process according to incoming student and resident clinician schedules.

During the patient depression screening process, patients were first brought into the examination room for their scheduled doctor's visit. They were introduced to the opportunity to be screened for depression as part of the project by a clinician. Patients who were willing to

participate were pre-screened for participation appropriateness by the clinician, assessing the patient for alertness to person, place, and date (month and year minimum). The clinician then gave a participation packet to patients who passed the pre-screening. Information about the project, how patients' information would be used, confidentiality, how to complete the PHQ-9, the demographic survey, and next steps were explained to patients. Patients self-reported their symptoms in the PHQ-9. Then, the clinician collected the PHQ-9, tallied the score, and reported the score to the lead neurologist. The lead neurologist validated the score and gave treatment if indicated. The DNP student input a summary of the PHQ-9 results and corresponding treatment if indicated into the patient's visit record in the EMR.

The sixth step was to evaluate selected EMR charts for documentation the completed PHQ-9, PHQ-9 results, and treatment if indicated. PHQ-9 data from each screening was electronically recorded into the EMR for documentation, storage, and study retrieval. Screening incidences were recorded for later comparison. Collection of all the data was completed by August 1, 2019.

Step seven was to evaluate the protocol data results and project implementation overall. All patient participants' PHQ-9 and treatment recommendation results were collected for analysis. Clinician participant pre- and post-training data were also collected for analysis as well as for user feedback. Analysis of the data was completed by November 1, 2019.

The eighth step included sustainability recommendations based on the depression screening implementation and data results provided to the operating manager. Stakeholders were provided with a comprehensive summary of the data results and operational costs of the protocol implementation. This step was completed by December 6, 2019.

Participation Time

Clinician participants received specific protocol training as part of the standardization of the depression screening process at the neurology center. Their training was aimed at assuring provider understanding of the PHQ-9 questionnaire and how to use it, current depression screening best practice, and appropriate, score-specific follow-up actions to be used in the validation process. Because residents rotate through the center, the training was conducted per rotation and on an individual basis as needed. The initial 20-minute orientation to the protocol was extended up to 1 hour to accommodate training questions and answers if needed. Training culminated in individual clinician participation in the protocol for the duration of their clinical rotation. Patients were screened with the PHQ-9 depression screening test once during protocol implementation.

Other aspects of the DNP practice change project also required time. The DNP student needed 1 week of collaborative effort with the operating manager of the clinic to confirm goals and permission for systematic implementation of the protocol at the practice site. Final Institutional Review Board approval took approximately 4 weeks. In terms of resident participation, it took at least a week to confirm important aspects of the interactive resident training program with the resident coordinator. Then, it took up to 4 weeks to create the resident training program.

Technical and logistical time considerations included establishing the baseline for systematic depression screening at the neurology clinic 3-4 months prior to protocol implementation. The interactive resident training took approximately 20-60 minutes for each resident or group of residents to complete. Then, the training required repetition over several

days depending on residents' schedules, the arrival of new residents, or unforeseen time conflicts.

Implementation time was another consideration. Completion off the PHQ-9 instrument itself took between 5-15 minutes to complete. Five minutes was a completion time indicated by Blackwell and McDermott (2014). Clinician scoring of completed PHQ-9s took approximately 5 minutes. PHQ-9 score validation and treatment recommendations from the lead neurologist could take between 30 minutes to an hour. The evaluation, interpretation, and reporting of project data took months to complete after protocol implementation was complete.

Resources and Budget

The DNP practice change project required technological and human resources. The neurology clinic's EMR system, Vertex, was used for storing the PHQ-9 screening results, and provider documentation of PHQ-9 validation and treatment recommendations. Paper PHQ-9s were scanned into Vertex. PHQ-9 results were also charted in Vertex. As Vertex was established at the neurology clinic, there was no additional charge for the use of Vertex. The EMR builder and providers involved in the screening earned no additional payment for their participation in the depression screening protocol. The DNP student continued to travel to South Florida from Texas, requiring a monetary investment of approximately $2000 for air travel and an estimated $1000 for car travel. Paper PHQ-9 questionnaires were printed at no extra charge to the organization. Costs of professional statistical analysis of project data was estimated at $500. Minimal project costs included printing and paper at an estimated 10 cents a page at 100 pages, $10 during the protocol implementation. Table 2 is a summary of the estimated project costs.

Table 2

Project Budget

Item	Cost
PHQ-9 printing	$.10 x100 copies= $10
DNP student's air travel	$2000.000
DNP student's car travel	$1000.00
Statistician fees	$500.00

Note. Estimated project expenses.

Sustainability

An estimated yearly budget, equipment for program continuation, EMR software and systemic maintenance and updating as needed, a clear training program with appropriate training tools, and provider endorsement were all needed to support protocol sustainability. The careful organization of PHQ-9 data collection and storage was another key to sustainability. Managing the PHQ-9 administration and documentation entailed ensuring that the data was saved and the PHQ-9 was preserved for continued future retrieval as part of the medical record.

The clinician training portion of the protocol was another essential aspect of sustainability. Successful project implementation and sustainability relied heavily upon the participation of the resident program coordinator. Resident and student clinicians rotated through the neurology clinic after weeks or months of training, sometimes returning for another clinical rotation at the neurology clinic. The resident program coordinator oversaw all training and rotations. The coordinator provided a source of continuity regarding what and how the residents learned and practiced while they are in the neurology center. Collaboration with the resident coordinator was essential to create a standardized, repeatable depression screening program for the residents, students, and other clinicians. In regards to sustainability, the resident program

coordinator would be responsible for the continued training and oversight of the depression screening protocol among the clinicians.

The Risk-Benefit Ratio

Risk is inherent in all research (Polit & Beck, 2017). Minimal risk is no more extreme than the risk experienced in daily living or ordinary procedures (Polit & Beck, 2017). Risk posed to study participants that is more than minimal should be mitigated as much as possible (Polit & Beck, 2017). When the anticipated risk outweighs study benefits to participants, then the study should be reformatted altogether (Polit & Beck, 2017). The risk-benefit ratio should account for whether or not the risk posed to study participants is proportionate to the study's benefit to society (Polit & Beck, 2017). Ultimately, the potential risk posed to study participants should not outweigh the humanitarian profit of the possible knowledge obtained by the study (Polit & Beck, 2017).

Through their research, Siu and the USPSTF (2016) identified that depression screening has minimal risk of adverse effects to participants. Thus, the human subjects in the DNP practice change project were at little risk of harm from the screening itself. Siu and USPSTF (2016) research indicated incidents of age-related gastrointestinal bleeding in reaction to SSRIs but still concluded that the net benefit of screening outweighed this potential harm. In the DNP practice change project, patients were given the benefit to discover if they were living with depression and to receive intervention to improve their condition.

Risk Minimization Plan

Morrato and Smith (2015) highlighted the importance of recognizing that risk minimization was an opportunity for pharmaceutical companies to increase trust between clinicians and patients. Similarly, in the DNP practice change project, anticipating and planning

for risk was a matter of stewardship and honoring participant trust. Potential risks to patients included unintended emotional response triggered by the screening process, incorrect patient translation or interpretation of the PHQ-9 questions, and missed or incorrect depression diagnosis.

During protocol implementation, each patient was already assigned a qualified physician as part of the routine assessment interview. This clinician was available to support and assess the patient if they experienced an unintended emotional response to any part of the depression screening process. The DNP student, a certified psychiatric-mental health nurse, was also available to support each participant.

In the event of a Spanish-English language barrier, a physician or member of the staff was always available to communicate with patients in Spanish and to assist them in understanding and completing the PHQ-9 correctly. Available medical providers who could communicate in Spanish included the DNP student and the lead neurologist. The valid, reliable Spanish version of the PHQ-9 was provided for Spanish-speaking patients who could not read and understand English (Zhong, Gelaye, Fann, Sanchez, & Williams, 2014). Depression screening was limited to English and Spanish because providers who spoke other languages were not always available to assist patients with PHQ-9 interpretation and completion.

Missed or incorrect diagnosis of depression in a participant was grounds for re-administration and re-validation of the patient's PHQ-9. Participants in such a scenario would have been provided an explanation of their revised results and the opportunity to ask the clinician questions about their repeat screening.

Summary of Chapter Three

The DNP practice change project design demonstrated the application of quantitative data collection methods to EBP. Through the use of the methods such as the PHQ-9 administration and clinician training described in this paper, depression can be detected, classified by severity, and treated, with patient outcomes ultimately improved (Beard et al., 2016; Mayberg, 2016; PHQScreeners & Pfizer, n.d.). In the DNP practice change project, a standardized screening protocol was implemented and provided resulting participant data. Practical keys to project sustainability included standardization and preservation of protocol guidelines and PHQ-9 administration.

The DNP practice change project was also an opportunity to improve depression identification and treatment if indicated for patients with neurological conditions. Important ethical considerations of the project included confidentiality, consent, beneficence, fidelity, non-maleficence, and the safety of participants and their data. Careful adherence to protocol and ethical best practice in this DNP practice change project protected the voluntary sample participation, reliability and security of the data, and efficacious patient and project outcomes.

Chapter Four: Project Evaluation

According to the WHO (2018), depression is the foremost cause of disability around the world. The support-based, systematic screening of adults for depression is nationally recommended (Siu & the United States Preventive Services Task Force [USPSTF], 2016). Moreover, depression is a concerning comorbid disability in patients with neurological conditions (Mayberg, 2016). The DNP evidence-based project discussed in this chapter was the implementation of a depression screening protocol for outpatients with neurological conditions. The Patient Health Questionnaire 9-item (PHQ-9) screening tool was utilized in the screening process. The purpose of this chapter is to discuss the results, significant findings, strengths, limitations, implications of the DNP essentials, and conclusions of the DNP practice change project.

Results

The DNP practice change project implementation process included several steps. Patients with neurological conditions and clinician participants, referring to medical residents, neurology attendings, and medical and nursing students, were recruited. After clinician participants were trained to screen patients for depression, they administered and scored patients' self-reported PHQ-9 tests. The lead neurologist validated PHQ-9 results and made treatment recommendations as necessary. Discussion of the results in this chapter included description of project findings, strengths, limitations, recommendations for stakeholders, and future considerations.

Participant Demographics

The sample patient population of the DNP practice change project consisted of $N = 66$ patients with neurological conditions. As shown in Table 3, the patient sample consisted of male and female adults in age ranges from 18 to 60 and older, representing seven ethnicities, five

racial categories, and comorbid or primary neurological diagnoses. There were 53% (*n* = 35) males and 47% (*n* = 31) females. By ethnicity, 36.4% (*n* = 24) were Non-Hispanic, 40.9% (*n* = 27) Hispanic, 3.01% (*n* = 2) other, and 19.7% (*n* = 13) not indicated. See Table 4 for ethnicity details. Categorized by race, 39.4% (*n* = 26) of participants were White, 22.7% (*n* = 15) Black, 10.6% (*n* = 7) multiple races, 12.1% (*n* = 8) other, and 15.2% (*n* = 10) not indicated. Diagnostically, 90.9% (*n* = 60) of patients had comorbid neurological conditions, 7.5% (*n* = 5) had primary neurological diagnoses, and 1.5% (*n* = 1) was not indicated.

Table 3

Summary of Sample Demographics

Category		*N* = 66	(100%)
Gender			
	Male	35	53
	Female	31	47
Age			
	18-20	1	1.5
	21-29	2	3
	30-39	6	9.1
	40-49	11	16.7
	50-59	22	33.3
	60+	24	36.4
Ethnicity			
	Non-Hispanic	24	36.4
	Hispanic	27	40.9
	Other	2	3.01
	Not Indicated	13	19.7
Race			
	White	26	39.4
	Black	15	22.7
	Multiple	7	10.6
	Other	8	12.1
	Not Indicated	10	15.2
Diagnosis			
	Neurological Comorbidities	60	90.9
	Primary Neurological	5	7.5

Diagnosis		
Not Indicated	1	1.5

Note. The Puerto Rican, Cuban, Cuban-American, and other Hispanic ethnicities were combined under the ethnicity category entitled “Hispanic.”

Table 4

Counts and Percentages of Patient Ethnicities

Category		*N = 66*		(100%)
Non-Hispanic		24		36.4
Hispanic		27		40.9
		N = 27	(40.9%)	
	Puerto Rican	5	7.6	
	Cuban	7	10.6	
	Cuban-American	3	4.5	
	Other Hispanic	12	18.2	
Left blank		13		19.7
Other		2		3.0

Note. The Puerto-Rican, Cuban, Cuban-American, and other Hispanic categories are enumerated in this chart as subcategories under "Hispanic."

Expected Outcomes

The purpose of the depression screening protocol was to identify and treat if indicated depression in patients with neurological conditions. The project had six expected outcomes. These six expected project outcomes aligned with the overall project purpose.

The first outcome was the documentation of the systematic depression screening baseline. Next was the creation of a support-based protocol that consisted of screening tool utilization, clinician validation of tool results, provision of score-specific treatment recommendations, and clinician training on the overall process (Siu & USPTF, 2016). The third outcome was the successful implementation of the practice change protocol as quantified by the number of completed PHQ-9 screenings and clinician pre-training and post-training tests. The following outcome was the use of a spreadsheet to organize and reflect the number of PHQ-9 screenings and clinician pre-and post-training tests completed each week. Fifth was the provision of a sustainability plan, including the estimated annual budget, equipment needed to continue the

protocol, EMR updates or programming that must be maintained, training tools with a clear training program, and provider endorsement. The sixth outcome was the submission of protocol implementation data to the stakeholders, including descriptive statistics of screening results, sample demographics, clinician training efficacy, budget, and unexpected findings.

Evaluation of Outcomes

The DNP practice change project was directed by six objectives. The first objective was to establish the depression screening baseline among the sample population. Next was to develop an evidence-based, systematic depression screening protocol at a neurology clinic in South Florida. Third was to implement the evidence-based depression screening protocol. The fourth outcome was to evaluate the use of the systematic depression screening protocol through weekly chart audit. After that, the objective was to develop a plan of sustainability to continue the systematic depression screening protocol at the neurology clinic in South Florida. The final outcome was to disseminate project findings to the stakeholders. Table 5 is a summary of the objectives, outcomes, and evaluation of outcomes.

Objective 1: Establish the depression screening baseline among the sample population.

A needs assessment was conducted prior to protocol implementation. The needs assessment identified that no systematic, support-based depression screening protocol was being routinely utilized in the management of all patients with neurological conditions. The baseline count for systematic, support-based depression screening was 0.

Objective 2: Develop an evidence-based, systematic depression screening protocol at a neurology clinic in South Florida.

A systematic, support-based depression screening protocol for outpatients with neurological conditions was created based on evidence-based best practice recommendations by

Siu and the USPSTF (2016). The protocol was tailored to the unique needs of the South Florida neurology clinic. Components of the protocol included consenting all participants, training clinicians to screen patients for depression, administration of the PHQ-9 to patients, and PHQ-9 score validation and treatment if indicated by the lead neurologist.

Objective 3: Implement the evidence-based depression screening protocol.

Sixty-six patient participants consented, were pre-screened, and completed PHQ-9 tests. Clinician participants were trained to administer and score the PHQ-9 screening test. Patient participants were pre-screened for alertness and orientation. The depression screening process was explained to patients who passed the pre-screening test and signed their consent to participate in the project. Patient participants received a participant packet that contained an explanation of the protocol, a consent signature page, the national suicide prevention hotline number, a demographics survey, and the PHQ-9 test. PHQ-9 tests were scored by a clinician and validated by the lead neurologist. The lead neurologist provided treatment recommendations as needed to patients who tested positive for depression. All survey data was collected, reviewed, and recorded in the EMR. The practice change project took place from May to August 2019.

Objective 4: Evaluate the use of the systematic depression screening protocol through weekly chart audit.

Every phase of the implementation process was managed and reviewed daily by the DNP student. All screening exams were securely stored daily. Patient screening data was intermittently input into the EMR. All project data was comprehensively checked, organized, and de-identified at the end of the protocol implementation.

Objective 5: Develop a plan of sustainability in the use of the systematic depression screening protocol at the neurology clinic in South Florida.

To be sustained, the depression screening protocol required endorsement by practice stakeholders and adoption as part of the routine patient examination process. Modifications were made to the protocol to identify how often within a year the PHQ-9 should be administered to each patient. Recommendations for the maintenance of staff, resident, and student training to administer the PHQ-9 were also made. The lead neurologist remained responsible for validating positive depression screens and making treatment recommendations as needed.

Recommendations were made to embed the PHQ-9 test into the EMR to facilitate future sustainability. Embedding the PHQ-9 into the EMR would help make PHQ-9 administration, results recording, and data management more efficient. Until then, the PHQ-9 would continue to be administered by paper and scanned into the EMR. The approximate budget for in-house printing was $.05 to $.10 per PHQ-9 test.

Objective 6: Disseminate the findings to the stakeholders.

Overall, the protocol implementation satisfied the project purpose of screening, identifying, and recommending depression treatment to patients with neurological conditions. For the purposes of the DNP evidence-based project, scores ranging from 5-27 (mild to severely depressed) were considered positive for depression, and scores ranging from 0-4 (none to minimal depression) were considered negative for depression. Table 6 is a summary of the DNP practice change project findings.

The PHQ-9 and treatment recommendation results from the DNP evidence-based project were disseminated to stakeholders. Demographic data from the patient sample population was also shared with stakeholders. The clinician pre-and post-training test data was incomplete and

unlinkable. As a result, there was no data from clinician pre- and post-training tests to report to stakeholders.

Table 5

Evaluation of Objective and Outcome Data

Objective	Outcome	Evaluation
Objective 1: Establish the depression screening baseline among the sample population.	Documentation of the systematic depression screening baseline	Met: A needs assessment demonstrated and documented a systematic depression screening baseline of 0.
Objective 2: Develop an evidence-based, systematic depression screening protocol at a neurology center in South Florida.	Creation of a support-based protocol that consists of screening tool utilization, clinician validation of tool results, provision of treatment if indicated, and provider training on the overall process (Siu & USPTF, 2016)	Met: A support-based, systematic depression screening protocol was created that included screening, clinician score validation, and treatment recommendations. Clinicians were trained on PHQ-9 utilization and screening protocol process.
Objective 3: Implement the evidence-based depression screening protocol.	Success of the practice change protocol will be measured by completion counts of PHQ-9 screening in the sample population as well as provider pre- and posttests.	Met with limitations: Incidences of screening, screening scores, treatment recommendations, and patient demographics were measured. Due to incomplete data, clinician pre-training and post-training data could not be measured.
Objective 4: Evaluate the use of the systematic depression screening protocol through weekly chart audit.	A spreadsheet will be used to organize and reflect the weekly counts of sample population depression	Met: A spreadsheet was created, documenting all screening, treatment, and demographic data. Provider

	screening as well as new provider trainings and pre-tests or existing provider posttests	pre-training and post-training data was incomplete, though collected and organized on the spreadsheet.
Objective 5: Develop a plan of sustainability in the use of the systematic depression screening protocol at the neurology center in South Florida.	The sustainability plan will include an estimated annual budget, equipment needed to continue the program, EMR updates or programming that must be maintained, training tools and a clear training program, and provider buy-in	Met, ongoing: The sustainability plan includes: fiscal considerations, updates for EMR integration, and ideas for sustainable protocol training and clinician endorsement.
Objective 6: Disseminate the findings to the stakeholders.	A program analysis including counts of depression screening, interventions, comparative analytics of the sample population scores and demographics, statistical analysis of the provider training per the pre- and posttest results as training efficacy measure, budget data, and unexpected findings will be supplied to the stakeholders.	Met, ongoing: Depression and treatment incidences were discussed with the primary stakeholder as protocol findings. Future stakeholder meetings are planned to further discuss findings and sustainability plans. Data from the provider pre-training and post-training tests were incomplete.

Note. Side-by-side list of each objective and corresponding expected outcome and evaluation

Table 6

Summary of Positive Depression Screening and Treatment Counts

Category	Positive for Depression (*n* = 37)	Positive for Depression (56.1%)	Received Treatment (*n* = 26)	Received Treatment (39.4%)
Gender				
Male	21	31.8	16	24.2
Female	16	24.2	10	15.2
Age				
18-20	1	1.5	0	0
21-29	1	1.5	1	1.5
30-39	3	4.6	1	1.5
40-49	8	12.2	7	10.6
50-59	16	24.2	13	19.7
60+	8	12.2		6.1
Ethnicity				
Non-Hispanic	11	16.7	8	12.12
Hispanic	17	25.7	14	21.2
Other	0	0	0	0
Not Indicated	9	13.7	4	6.1
Race				
White	13	19.7	12	18.2
Black	7	10.6	5	7.5
Multiple	5	7.6	3	4.5
Other	6	9.1	3	4.5
Not Indicated	6	9.1	3	4.5
Diagnosis				
Neurological Comorbidities	33	50	24	36.4
Primary Neurological Diagnosis	3	4.5	1	1.5
Not Indicated	1	1.5	1	1.5

Note. Summary of positive depression screening and treatment results stratified by gender, age, ethnicity, race, and neurological diagnosis

Table 6 summarizes the DNP practice change project results. Table 6 indicates that the DNP practice change project successfully identified depression and recommended treatment to a demographically diverse sample of patients with neurological conditions. Among the $N = 66$

patient participants, 56.1% (*n* = 37) screened positive for depression, and 39.4% (*n* = 26) received treatment recommendations. Depression screening and treatment recommendation results of the practice change project were stratified by age, gender, ethnicity, race, and neurological diagnosis.

Treatment options included none, re-evaluation at next visit, pharmaceutical intervention, psychotherapeutic intervention, psychotherapeutic with pharmaceutical intervention, other, and declined. Pharmaceutical intervention, 16.7% (*n* = 11), was the most common type of treatment received by patient participants. Table 7 summarizes how many patients received each type of treatment recommendation.

Table 7

Treatment Type Frequencies

Treatment Category	*N = 66*	%
Not indicated	39	59.1
Re-evaluate at next visit	1	1.5
Pharmaceutical intervention	11	16.7
Psychotherapeutic intervention	1	1.5
Pharmaceutical and psychotherapeutic intervention	4	6.1
Other	9	13.6
Declined	1	1.5

Note. Details number of patients who received each type of treatment recommendation

By age, people in their 50s, representing 24.2% (*n* = 16), represented the largest number of patient participants who screened positive for depression. Thirteen of the patients in their 50s, 19.7%, received treatment. According to gender, 31.8% (*n* = 21) screened positive for depression and received treatment more frequently than women. Sixteen women, 24.2% (*n* = 16) screened positive for depression, and 15.2% (*n* = 10) received corresponding treatment recommendations.

In Table 4, the four groups of Hispanic participants were combined under the title, "Hispanic." As shown in Table 3, Hispanic patients, 25.7% (*n* = 17), most commonly screened positive for depression. Hispanic patients also more commonly received treatment recommendations, 21.2% (*n* = 14) than any other individual ethnic group. Eleven, or 16.7%, Non-Hispanic participants screened positive for depression, and 12.2% (*n* = 8) received treatment recommendations. Figure 2 summarizes ethnicity and treatment results.

According to race, White participants, 19.7% (*n* = 13) most commonly screened positive for depression. White participants, 18.2% (*n* = 12) also received the most treatment recommendations. Figure 1 details race and treatment recommendations results. Diagnostically, 24.2% (*n* = 50) patients with neurological comorbidities screened positive for depression. Twenty-four participants with neurological comorbidities, or 36.5%, received treatment recommendations.

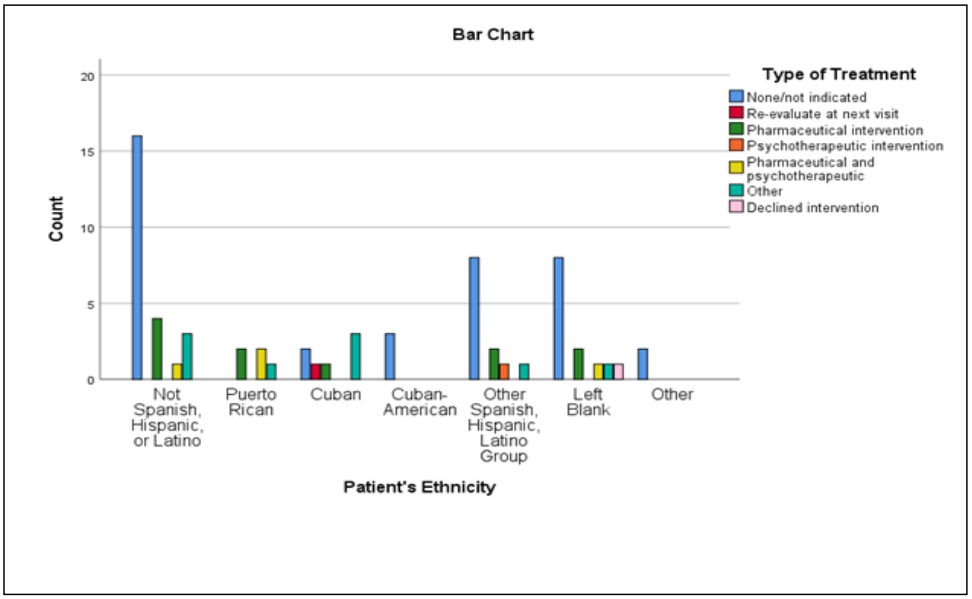


Figure 1. Summary of treatments administered to patients categorized by ethnicity.

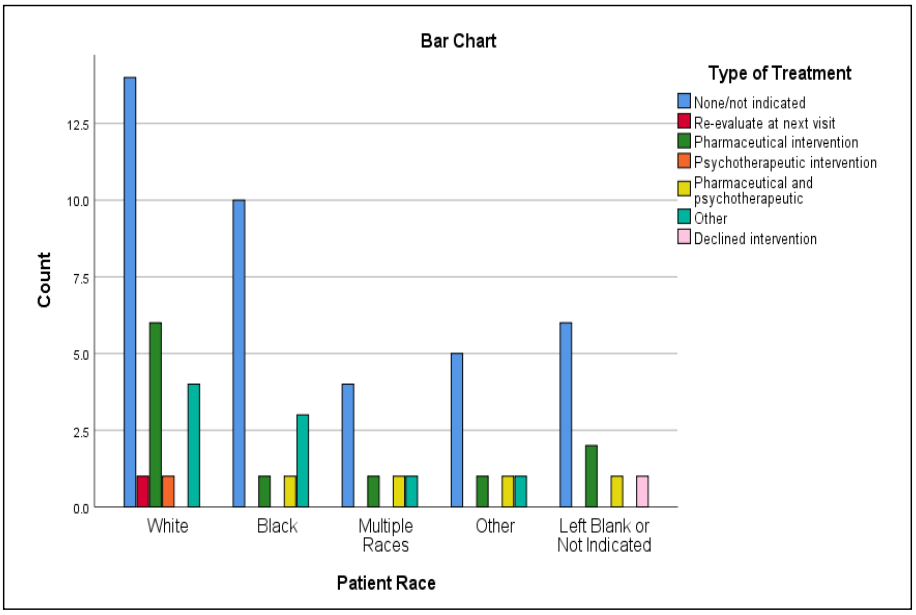


Figure 2. Summary of treatments administered to patients categorized by race.

Patients also self-reported the level of functional difficulty caused by the symptoms of depression that they indicated on the PHQ-9. Most patients self-reported that the level of functional difficulty resulting from their symptoms was either difficult or somewhat difficult, 31.8% (n = 21) in both categories. See Table 8 for details.

Table 8

Levels of Functional Difficulty

Level of Difficulty	*N* = 66	%
Not difficulty	21	31.8
Somewhat difficult	21	31.8
Very difficult	12	18.2
Extremely difficult	2	3.0
Left blank	9	13.6
Multi select/other	1	1.5

Note. Patients' self-reported levels of functional difficulty related to self-reported depression symptoms on the PHQ-9.

Discussion

The DNP practice change project resulted in the successful implementation of a depression screening protocol in a South Florida neurology clinic. Patients with neurological conditions were screened, identified, and received treatment if indicated for depression. The project answered the PICO question, demonstrating that the implementation of a systematic depression screening protocol using the PHQ-9 screening tool did increase the screening, identification, and treatment of depression in patients with neurological conditions in a South Florida neurology clinic. The practice change project demonstrated that depression screening in outpatient neurology is a possible means of meeting Siu and USPSTF (2016) national recommendations for systematic, support-based screening of adults for depression.

Depression is a serious concern in patients with neurological conditions (Mayberg, 2016). The DNP practice change project evidenced that the implementation of a support-based, systematic depression screening protocol led to the identification of 56.1% (n = 37) and treatment of 39.4% (n = 26) of patient participants. Prior to the practice change project, the

baseline systematic screening, identification, and treatment of patients with depression was $N = 0$.

Strengths

Strengths of the DNP practice change project included the successful screening, identification, and treatment of depression in patients with neurological conditions through the use of a systematic depression screening protocol. Other strengths were the availability of patients and clinicians for convenience sampling, supportive clinical leadership, interdisciplinary collaboration, and immediate access to PHQ-9 data results. The PHQ-9 has also been successfully used in other depression screening models, such as in the work of Loeb et al. (2014). Other successful examples of depression screening and PHQ-9 utilization found in the literature supportively validated the DNP practice change project. This validation was another strength of the DNP practice change project, as well as the utilization of the EMR for data recording, review, and analysis.

Limitations

Several limitations of the practice change project impacted the implementation and outcomes of the protocol. The first was in regard to clinician training. The DNP student conducted the clinician training with small groups or individuals. With each training, the DNP student learned areas for improvement in organization, content, and delivery of the training. For this reason, each training varied instead of sharing more precise consistency. Furthermore, insufficient linkable clinician pre- and post-training test data made it impossible to provide inferential data results on knowledge and attitude changes of clinician participants.

Another limitation was the small clinician participant sample size. The small number of clinician participants made it unfeasible to simultaneously manage screening data and provide

screening consultation to all participants. Due to the small number of clinician participants, the DNP student disseminated and scored most of the screening exams. Obstacles to resident participation included having to obtain affiliation agreements from certain residency programs prior to residents' participation in the DNP practice change project.

Literature suggests challenges in correctly and effectively treating depression in patients (Mayberg, 2016). Due to time constraints and project design, the depression screening practice change project provided only a single screening with treatment if indicated to each patient participant. Future depression screening or treatment follow-up with each patient participant was not a part of the screening protocol at the time. In the absence of follow-up, effectiveness of treatment recommendations could not be evaluated. Future considerations included following up with patients who were treated for depression to determine if they recovered from their depression as a result of the treatment recommendations they received.

Recommendation for future implementation included that all patients who receive treatment and those who score as moderately depressed or higher should receive a follow-up phone call within a week of screening to ascertain that they are not having suicidal thoughts and to ask if the patient has any questions about treatment. All patients who receive treatment recommendations should be seen at a follow-up appointment within 2 months to assess how effective the treatment has been for the patient. New treatment recommendations or adjustments should be made at that time if indicated.

Participant inclusion in the protocol was limited to patients who were present at the clinic for doctor appointments because the DNP practice change project was based on convenience sampling. Due to the complexity of patients' neurological diagnoses, inclusion criteria for

participation included pre-screening patients for alertness and orientation to person, place, month, and year.

Regarding PHQ-9 administration, depression severity may have been underreported on tests where patients left specific answers blank. Paper PHQ-9 tests were also scanned and charted into different parts of the EMR. Because all relevant protocol data results were not stored or reported in the same place in the EMR, data abstraction from the EMR was moderately challenging.

Managing the paper PHQ-9s and participant packet also posed challenges in that sometimes the forms became separated from each other. Also, for approximately 15-20 consented patients, the slip of paper with the suicide hotline number was left out of the packet accidentally. This error was disclosed to the IRB and corrective action of numbering each packet and using a checklist to ensure complete packet contents was implemented. To rectify these problems in the future, recommendations were that all pages of each packet should be numbered with the same code. Furthermore, a checklist of each packet number and packet page should be used to ensure that each packet contained all the required documents and that each patient received all required documents.

Implications for Nursing Practice

The DNP practice change project effectively led to the identification and treatment of depression in patients with neurological conditions. Contributions of the DNP practice change project to the body of evidence regarding the utility of depression screening have healthcare, population, and preventative health importance. The DNP practice change project also presented valuable implications for nursing practice in regards to the DNP essentials.

Scientific Underpinnings for Practice

DNP Essential I refers to the application of life sciences, health, and wholeness to the advanced practice of the DNP graduate (American Association of Colleges of Nursing [AACN], 2006). A goal of the USPSTF is the preventative care of individuals not exhibiting overt signs of illness (Siu & USPSTF, 2016). The DNP practice change project was informed by depression screening recommendations of the USPSTF (2016) and its philosophy of screening to promote health. From this standpoint of illness identification, depression screening addressed health and wellness, incorporating an understanding of the life sciences and nursing practice as discussed in DNP Essential I.

DNP Essential I also refers to the role of the nurse in impacting optimal health and function for individuals (AACN, 2006). The PHQ-9 was created as a tool to aid in the diagnosis and treatment of depression (Blackwell & McDermott, 2014). The PHQ-9's design was based on the itemized detection of nine diagnostic measurements of depression (Blackwell & McDermott, 2014). Through the utilization of the PHQ-9 screening tool, the DNP practice change project demonstrated that symptoms of depression can be identified and treated as part of wellness promotion and evidence-based practice.

Organizational and Systems Leadership

DNP Essential II states that organizational and systems leadership are integral to healthcare improvement (AACN, 2006). National recommendations underscore that depression screening and treatment programs should be systematic and support-based (Siu & USPSTF, 2016). The role of systems and organizational leadership in impacting change was underlined in the development and implementation of this DNP practice change project. Effectively establishing systematic depression screening in this DNP practice change project required

sufficient time, staffing, and organizational support, emphasizing the role of organizational leadership in advancing practice improvement. Organizational leadership in this practice change project included project oversight from the DNP student as well as the commitment and endorsement of the organization's operational management.

Clinical Scholarship and Analytic Methods

DNP Essential III discusses analytic problem solving and the scholarship of applying knowledge to evidence-based practice in healthcare (AACN, 2006). A significant aspect of the data collection and analysis process in the DNP practice change project was deciding what to measure and analyze. For instance, when analyzing PHQ-9 descriptive statistics, occupation as a demographic category was determined to be too varied to provide useful information in the comparison of population demographics and PHQ-9 results. The value of clearly defining the data collection parameters and the expected outcomes that will drive an organization's depression screening protocol is a critical implication in clinical scholarship and analysis.

Information Systems

DNP Essential IV refers to the importance of proficient use of information technology in healthcare quality improvement and data management (AACN, 2006). From implementation to future considerations, information technology was instrumental in various aspects of the DNP practice change project. Regarding implications for future considerations in depression screening, embedding the PHQ-9 into the EMR would allow PHQ-9 screening results to be saved directly into the EMR. Once saved directly into the EMR, PHQ-9 and treatment data could be more easily accessed and analyzed for patient care and billing purposes. Depression screening is a billable service both privately and through the Centers for Medicare and Medicaid Services (CMS) (Savoy & O'Gurek, 2016a). Though billing was not a part of the DNP practice change

project, billing for depression could provide supportive reimbursement for protocol sustainability.

Healthcare Policy for Advocacy in Healthcare

DNP Essential V addresses the responsibilities of the DNP nurse in regard to the many aspects of healthcare policy and advocacy (AACN, 2006). In the DNP practice change project, the DNP student played an insightful role in designing and directing the depression screening protocol. The DNP student promoted depression screening as a policy change, thereby advocating for patients who may have undiagnosed but treatable depression to be identified and receive treatment. As aforementioned, depression is the preeminent cause of disability globally (WHO, 2018). At worst, depression can result in death by suicide (WHO, 2018). The advocacy implications of depression screening in outpatient neurology include the opportunity for depression screening to be adopted as organizational policy so that all patients within a neurology practice can have access to depression diagnosis, treatment, and suicide prevention if needed.

Interprofessional Collaboration

According to DNP Essential VI, DNP graduates are equipped to effectively participate in and lead interprofessional collaboration (AACN, 2006). Interprofessional collaboration was essential to the execution and success of the DNP practice change project. The project included administration of the PHQ-9 by participating clinicians, recording of the data by office personnel, validation of PHQ-9 results and treatment recommendations by the lead neurologist, and coordination by the nurse leader. Further, treatment included referrals for neuropsychological evaluation and cognitive behavioral therapy. Therefore, the DNP practice change project was an interprofessional, interdisciplinary, multi-professional collaborative effort.

The implications of interprofessional collaboration from the DNP practice change project included the leadership responsibility of the DNP student to invite and support the collaborative participation of the interprofessional team.

Clinical Prevention and Population Health

DNP Essential VII defines and underscores the population health implications of prevention interventions in promoting health for individuals, aggregates, and the nation (AACN, 2006). Nationally, Siu and the USPSTF (2016) recommended the systematic screening of all U.S. adults for depression in a manner that provided adequate support for diagnosis, treatment, and follow-up. The DNP practice change project demonstrated that systematic depression screening led to the identification and treatment of adults with neurological conditions and varying degrees of depression ranging from not depressed to severely depressed.

Advanced Nursing Practice

DNP Essential VIII focusses on the refined, specialized care, mentorship, and professionalism exemplified by the DNP graduate (AACN, 2006). The DNP practice change project required the DNP student to demonstrate high quality patient care, professionalism, collaboration, and capacity building with the interprofessional team and oversight of the project.

Savoy and O'Gurek (2016b) noted the difficulty in diagnosing depression, as it may be confused with other comorbidities. The authors highlight how crucial correct diagnosis is for appropriate treatment of depression (Savoy & O'Gurek, 2016b). In the DNP practice change project, the DNP student was instrumental in facilitating the processing of assessing and screening patients with neurological conditions for depression. Nursing practice implications evidenced in the DNP practice change project included the responsibility of the DNP student to demonstrate expertise in patient assessment, leadership, technology and data management,

interprofessional collaboration and training, and commitment to the health promotion and advocacy importance of the screening protocol.

Conclusions

The DNP practice change project discussed in this manuscript led to the implementation of a depression screening protocol that successfully identified and treated depression in outpatients with neurological conditions at a neurology clinic in South Florida. The project evidenced that systematic, support-based depression screening using the PHQ-9 effectively led to the diagnosis of 56.1% (n = 37) and treatment of 39.4% (n = 26) participants of N = 66 patients screened for depression. Implications of the project results in relation to the DNP essentials included areas of preventive medicine, population health, patient advocacy, and organizational policy. Other implications of the project and the DNP essentials included the reliance of protocol success on advanced nursing practice, interprofessional collaboration, and teamwork. The results of the DNP practice change project may contribute to the development of future evidence-based practice in depression screening for outpatients with neurological conditions. Future research is needed to determine the level of generalizability of the DNP practice change protocol results to other neurology clinics and disciplines.

References

American Association of Colleges of Nursing. (2006). The essentials of doctoral education for advanced nursing practice. Retrieved from https://www.aacnnursing.org/Portals/42/Publications/DNPEssentials.pdf

Beard, C., Hsu, K. J., Rifkin, L. S., Busch, A. B., & Bjorgvinsson, T. (2016). Validation of the PHQ-9 in a psychiatric sample. *Journal of Affective Disorders, 193*, 267-273. https://doi.org/10.1016/j.jad.2015.12.075

Becker, C. M., Glasscoff, M. A., Felts, W. M., & Kent, C. (2015). Adapting and using quality management methods to improve health promotion. *Explore: The Journal of Science & Healing, 11*(3), 222-228. Retrieved from http://dx.doi.org/10.1016/j.explore.2015.02.004

Blackwell, T. L., & McDermott. A. N. (2014). Review of the Patient Health Questionnaire-9 (PHQ-9). *Rehabilitation Counseling Bulletin, 57*(4), 246-248. https://doi.org/10.1177/0034355213515305

Bonney, W. (2014). Medical errors: Moral and ethical considerations. *Journal of Hospital Administration, 3*(2), 80-88. http://dx.doi.org/10.5430/jha.v3n2p80

Bulloch, A. G., Fiest, K. M., Williams, J. V., Lavorato, D., Berzins, Jette, N., … Patten, S. B. (2015). Depression – A common disorder across a broad spectrum of neurological conditions: A cross-sectional nationally representative survey. *General Hospital Psychiatry*, *37*(6), 507-512. https://doi.org/10.1016/j.genhosppsych.2015.06.007

Carey, M., Jones, K., Meadows, G., Sanson-Fisher, R., D'Este, C., Inder, K., … Russell, G. (2014). Accuracy of general practitioner unassisted detection of depression. *Australian & New Zealand Journal of Psychiatry,* 48(6), 571-578. doi:10.1177/0004867413520047.

Centers for Disease Control and Prevention. (2018). *Child development: Fidelity monitoring for Legacy: Tools and resources.* Retrieved from https://www.cdc.gov/ncbddd/childdevelopment/legacy-fidelity-monitoring.html

Creative Research Systems. (n.d.). Sample size calculator. Retrieved from https://www.surveysystem.com/sscalc.htm

Cronk, B. (2014). *How to use SPSS* (8th ed.). Glendale, CA: Pyrczak.

El-Den, S., O'Reilley, C., & Chen, T. F. (2018). Development and psychometric evaluation of a questionnaire to measure attitudes toward perinatal depression and acceptability of screening: The PND attitudes and screening acceptability questionnaire (PASAQ). *Evaluation & the Health Professions,* 1-28. doi:10.1177/0163278718801434.

Familiar, I, Ortiz-Panozo, E., Hall, B., Vieitez, I., Romieu, Il., Lopez-Ridaura, & Lajous, M. (2014). Factor structure of the Spanish version of the Patient Health Questionnaire-9 in Mexican women. *International Journal of Methods in Psychiatric Research, 24*(1), 74-82. https://doi-org.ezproxylocal.library.nova.edu/10.1002/mpr.1461

Farmer, L & Lumdy, A. (2017). Informed consent: Ethical and legal considerations for advanced practice nurses. *The Journal for Nurse Practitioners, 13*(2), 124-130. https://doi.org/10.1016/j.nurpra.2016.08.011

Gelaye, B., Tadesse, M. G., Williams, M. A., Fann, J. R., Stoep, V., & Zhou, X. A. (2015). Assessing validity of a depression screening instrument in the absence of a gold standard. *Annals of Epidemiology, 24*(7), 527-531. doi:10.1016/j.annepidem.2014.04.009

Goldstein, K. M., Vogt, D., Hamilton, A., Frayne, S. M., Gierisch, J., Blakeney, J., …Yano, E. M. (2018). Practice-based research networks add value to evidence-based quality improvement. *Healthcare, 6*, 128-134. https://doi.org/10.1016/j.hjdsi.2017.06.008

Gray, J. R., Grove, S. K., & Sutherland, S. (2017). *Burns and Grove's the practice of nursing research: Appraisal, synthesis, and generation of evidence* (8th ed.). St. Louis, MO: Elsevier.

Hsin, J., & Torous, J. (2016). Ethical issues in the treatment of depression. *Focus, 14*(2), 214-218. https://doi.org/10.1176/appi.focus.20150046

Hofmann, B., & Stanak, M. (2018). Nudging in screening: Literature review and ethical guidance. *Patient Education and Counseling, 101*(9), 1561-1569. https://doi.org/10.1016/j.pec.2018.03.021

Kanner, A. S. (2018). *Depression as a systematic illness*. In J. J. Strain & M. Blumenfield (Eds.), *Book title* (pp. 123). New York, NY: Oxford University Press. Retrieved from https://books.google.com/books?hl=en&lr=&id=uPdJDwAAQBAJ&oi=fnd&pg=PA123&dq=depression+in+neurological+disorders&ots=rLUORPorB8&sig=qfGSz832gZ4uMDTDWtlRicW2r-k#v=onepage&q=depression%20in%20neurological%20disorders&f=false

Kellogg, K. C., Gainer, L. A., Allen, A. S., O'Sullivan, T., & Singer, S. J. (2017). An intraorganizational model for developing and spreading quality improvement innovations. *Health Care Management Review, 42*(4), 292-302. doi:10.1097/HMR.0000000000000122.

Loeb, D., Sieja, A., Corral, J., Zehnder, N. G., Guiton, G., & Nease, D. E. (2015). Evaluation of the role of training in the implementation of a depression screening and treatment protocol in 2 academic outpatient internal medicine clinics utilizing the electronic medical record. *American Journal of Medical Quality, 30*(4), 359-366.

doi:10.1177/1062860614532681. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4608234

Mantas, S., Juvinya, D., Bertran, C., Roldan, J., Sequeira, C., & Lluch, T. (2015). Evaluation of positive mental health and coherence in mental health professionals. *Portuguese Journal of Mental Health Nursing, 13*, 34-42. Retrieved from https://www.researchgate.net/publication/280082240 EVALUATION OF POSITIVE MENTAL HEALTH AND_SENSE_OF_COHERENCE_IN_MENTAL_HEALTH_PROFESSIONALS/download

Mayberg, H. S. (2016). Implementing recommendations for depression screening of adults. How can neurology contribute to the dialogue? *Journal of the American Medical Association Neurology, 73*(3), 270-271. doi:10.1001/jamaneurol.2015.5048.

MentalHealth.gov. (2017). *Depression.* Retrieved from https://www.mentalhealth.gov/what-to-look-for/mood-disorders/depression

Moriarty, A. S., Gilbody, S., McMillan, D., & Manea, L. (2015). Screening and case finding for major depressive disorder using the Patient Health Questionnaire (PHQ-9): A meta-analysis. *General Hospital Psychiatry, 7*(6), 567-576. https://doi.org/10.1016/j.genhosppsych.2015.06.012

Morrato, E. H., & Smith, M. Y. (2015). Integrating risk minimization planning throughout the clinical development and commercialization lifecycle: An opinion on how drug development could be improved. *Therapeutics and Clinical Risk Management, 11,* 339-348. doi: 10.2147/TCRM.S78202.

PHQScreeners, & Pfizer. (n.d.). *PHQ and GAD-7 instructions*. Retrieved from https://www.phqscreeners.com/sites/g/files/g10016261/f/201412/instructions.pdf

Polit, D. F., & Beck, C. T. (2017). *Nursing research: Generating and assessing evidence for nursing practice* (10th ed.). Wolters Kluwer

Rathore, J. S., Jehi, L. E., Fan, Y., Patel, S. I., Foldway-Schaefer, N., Ramirez, M. J. … Tesar, G. E. (2014). Validation of the Patient Health Questionnaire-9 (PHQ-9) for depressions screening in adults with epilepsy. *Epilepsy & Behavior, 37,* 215-220. https://doi.org/10.1016/j.yebeh.2014.06.030

Roberts, L., & Kim, J. P. (2018). Does informed consent given by healthy individuals when enrolling in clinical research feel less voluntary than for ill individuals? *Journal of Psychiatric Research, 103,* 33-37. https://doi.org/10.1016/j.jpsychires.2018.04.018

Savoy, M., & O'Gurek, D. (2016a). Family physicians are well-placed to catch depression in patients early–and get reimbursed for it. *Family Practice Management, 23*(2), 16-20. Retrieved from https://www.aafp.org/fpm/2016/0300/p16.html

Savoy, M., & O'Gurek, D. (2016b). Screening your adult patients for depression. *Family Practice Management, 23*(2), 16-20. Retrieved from https://www.aafp.org/fpm/2016/0300/p16.html

Saunders, J. (2016). Confidentiality. *Medicine, 44*(10), 596-597. https://doi.org/10.1016/j.mpmed.2016.07.014

Schaeffer, A. M., & Jolles, D. (2018). Not missing the opportunity: Improving depression screening and follow-up in a multicultural community. *The Joint Commission Journal on Quality and Patient Safety 2018*, *45*(1), 31-39. https://doi.org/10.1016/j.jcjq.2018.06.002

Siu, A. L., United States Preventive Service Task Force. (2016). Screening for depression in adults. U.S. Preventive Services Task Force recommendation. *Journal of the American Medical Association, 315*(4), 380-387. doi:10.1001/jama.2015.18392.

Super, S., Wagemakers, M. A., Picavet, H., Verkooijen, K. T., & Koelen, M. A. (2015). Strengthening sense of coherence: Opportunities for theory building in health promotion. *Health Promotion International, 31*(4), 869-878. doi.10.1093/heapro/dav071

United States Census Bureau. (n.d.). Race and ethnicity. Retrieved from https://www.census.gov/mso/www/training/pdf/race-ethnicity-onepager.pdf

United States Department of Health and Human Services. *Health information privacy.* Retrieved from https://www.hhs.gov/hipaa/for-professionals/special-topics/research/index.html

Walker, J., Wanat, M., Fielding, J., Martin, P., Petit, A., Burke, K, & Sharpe, M. (2017). Original Research Reports. Screening medical patients for depression: Lessons from a national program in cancer clinics. *Psychosomatics, 58*(3), 274-280. https://doi.org/10.1016/j.psym.2017.01.002

Whooley, M. A., (2016). Screening for depression – A tale of two questions. *Journal of American Medical Association Neurology, 176*(4). doi:10.1001/jamainternmed.2015.8493.

World Health Organization. (2018). *Depression*. Retrieved from http://www.who.int/en/news-room/fact-sheets/detail/depression

World Health Organization. (2019). *Depression: Definition*. Retrieved from http://www.euro.who.int/en/health-topics/noncommunicable-diseases/pages/news/news/2012/10/depression-in-europe/depression-definition

Zhong, Q., Gelaye, B., Fann, J. R., Sanchez, S., & Williams, M. A. (2014). Cross-cultural validity of the Spanish version of the PHQ-9 among pregnant Peruvian women: A Rash item response theory analysis. *Journal of Affective Disorders*, *158,* 148-153. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4004697/#R14

Appendix A: IRB Approval Letter

NSU NOVA SOUTHEASTERN UNIVERSITY
Institutional Review Board

MEMORANDUM

To: **Lakicia Foster**

From: **Vanessa A Johnson, Ph.D.,**
Center Representative, Institutional Review Board

Date: **April 30, 2019**

Re: **IRB #: 2019-258; Title, "Depression Screening in Outpatient Neurology"**

I have reviewed the above-referenced research protocol at the center level. Based on the information provided, I have determined that this study is exempt from further IRB review under **45 CFR 46.101(b) (Exempt 2: Interviews, surveys, focus groups, observations of public behavior, and other similar methodologies)**. You may proceed with your study as described to the IRB. As principal investigator, you must adhere to the following requirements:

1) CONSENT: If recruitment procedures include consent forms, they must be obtained in such a manner that they are clearly understood by the subjects and the process affords subjects the opportunity to ask questions, obtain detailed answers from those directly involved in the research, and have sufficient time to consider their participation after they have been provided this information. The subjects must be given a copy of the signed consent document, and a copy must be placed in a secure file separate from de-identified participant information. Record of informed consent must be retained for a minimum of three years from the conclusion of the study.

2) ADVERSE EVENTS/UNANTICIPATED PROBLEMS: The principal investigator is required to notify the IRB chair and me (954-262-5369 and Vanessa A Johnson, Ph.D., respectively) of any adverse reactions or unanticipated events that may develop as a result of this study. Reactions or events may include, but are not limited to, injury, depression as a result of participation in the study, life-threatening situation, death, or loss of confidentiality/anonymity of subject. Approval may be withdrawn if the problem is serious.

3) AMENDMENTS: Any changes in the study (e.g., procedures, number or types of subjects, consent forms, investigators, etc.) must be approved by the IRB prior to implementation. Please be advised that changes in a study may require further review depending on the nature of the change. Please contact me with any questions regarding amendments or changes to your study.

The NSU IRB is in compliance with the requirements for the protection of human subjects prescribed in Part 46 of Title 45 of the Code of Federal Regulations (45 CFR 46) revised June 18, 1991.

Cc: Lori Lupe
Vanessa A Johnson, Ph.D.

Appendix B: Literature Review Matrix

Author(s)/ Year	Level of Evidence	Theoretical/ Conceptual Framework	Problem/ Population and Purpose	Intervention	Comparison (if any)	Outcomes/ Conclusions	Use of Evidence/ Implications for Practice
Beard, C., Hsu, K. J., Rifkin, L. S., Busch, A. B., & Bjorgvinsson, T. (2016)	VII	N/A	Purpose: evaluation of the Patient Health Questionnaire-9 item (PHQ-9) in psychiatry Population: Psychiatric patients	Administration of the PHQ-9	PHQ-9 results were compared to Center for Epidemiological Studies of Depresision-10 (CESD-10) data.	The PHQ-9 demonstrated good sensitivity and specificity for detection of depression as a screener and severity measure for scores ≥ 13.	The PHQ-9 may serve as a good depression screening alternative in the psychiatric setting.
Becker, C.M., Glasscoff, M. A., Felts, W.M., & Kent, C. (2015)	VII	Salutogenesis	Purpose: To illustrate how to use salutogenesis to push health promotion past pathology models	N/A	In the context of health promotion, the salutogenesis model of health was compared to quality improvement business model.	Salutogenesis offers a means of promoting positive health instead of models that focus on absence of symptoms of disease	Approach health from the salutogenic standpoint of developing capacity within the system to address health difficulties instead of merely trying to treat disease.

Blackwell, T. L., & McDermott. A. N. (2014)	VII	Unspecified	Population: depressed adults	N/A	N/A	The PHQ-9 is a brief tool that can be used to detect depression and inform related treatment.	The PHQ-9 can be integrated into clinical practice as a depression screener, but it must be validated by clinician review, not left to stand alone as a diagnostic tool.
Bulloch, A. G., Fiest, K. M., Williams, J. V., Lavorato, D., Berzins, Jeette, N… & Patten, S. B. (2015)	VI	Unspecified	Population: a representative sample of 4408 Canadians with neurological conditions Purpose: To estimate the point prevalence of depression across 10 neurological disorders	N/A	Depression point prevalence across the 10 neurological conditions were comparatively discussed and ranked in the article.	The high incidence of depression among neurologically impaired people was highlighted in the study.	The importance of depression screening for persons with neurological conditions was emphasized by the study results.
Carey, M., Jones, K., Meadows, G., Sanson-Fisher, R., D'Este, C., Inder, K.,…	III	Unspecified	Population: 1,558 Australian patients and 51 practitioners Purpose: To describe the	The PHQ-9 and provider judgement were both applied to the same patient case and then detection	Provider depression screening was compared to PHQ-9 depression screening in terms of specificity, sensitivity, and	Physician judgment particularly differed from PHQ-9 sensitivity, meaning that while both	This study provides support for clinician training in the use of depression screening tools to assure accuracy of detection and

Russel, G. (2014)			comparison of clinician judgement-based depression screening and screening tool-based screening	results were analyzed.	prevalence of depression detected.	detected the same prevalence of depression, the physician detection was of the wrong patients.	thereby appropriate follow-up.
Gelaye, B., Tadessse, M. G., Williams, M. A., Vander Stoep, A., & Zhou, X., A. (2014)	VI	Unspecified	Purpose: To evaluate how use of the Composite International Diagnostic Interview (CIDI) biases approximations of PHQ-9 precision Population: outpatient participants diagnosed with major depressive disorder from Saint Paul General Specialized Hospital in Addis Ababa	Participants were assessed with both the CIDI and the PHQ-9.	The psychometrics of the PHQ-9 were compared against the CIDI. Psychometric properties of the PHQ-9 were also compared to the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) interview as a gold standard.	When a gold standard is unavailable, Bayesian statistical methods may be used to evaluate the validity of mental health screening instruments as diagnostic tools.	The PHQ-9 can be compared against another gold standard screening and diagnostic tool or Bayesian statistics to determine if the PHQ-9 is a psychometrically viable instrument that can be used in the diagnosis of depression in a new practice setting.

Mantas, S., Juvinya, D., Bertran, C., Roldan, J., Sequeira, C., & Lluch, T. (2015)	IV	Salutogenesis	Population: All professionals in the mental health system of Parc Hospitalari Martí Julià Purpose: To evaluate the positive mental health of the providers	Participants took the Sense of Coherence Questionnaire and Positive Mental Health questionnaire to quantify their sense of coherence mental health self-perception.	Results from the two questionnaires were analyzed for correlation.	Study results demonstrated that the professionals had overall high sense of coherence and positive mental health.	In reference to the salutogenic model, correlating relationships between the two questionnaires may serve as a framework by which positive mental health can be evaluated.
Mayberg, H. S. (2016)	VII	N/A	Population: United States adults as first described in the 2016 USPSTF report Purpose: Discussion of the report and what contributions neurology can make to improving depression screening accuracy	N/A	N/A	Depression screening is validated per the 2016 USPSTF report and strategies used in neurology may be used to identify specific indices of depression.	Neuronal imaging may provide the means of definitively, effectively diagnosing depression in the future.

Schaeffer, A. M., & Jolles, D. (2018)	IV	Plan-Do-Study-Act (PDSA)	Population: Clients in a multicultural health center, 237 unduplicated patients Purpose: To increase the efficacy of the SBIRT depression screening program from 9.1% to 75%	A highly structured system of four PDSA cycles of PHQ-9 survey administration to the patient population were conducted.	Pre- and post-intervention screening efficacy. Also statistics after each cycle were recorded to determine trends. Verbal PHQ-9 administration vs. paper PHQ-9 preference was also noted.	At the end of the four PDSA cycles, efficacy of depression screening and follow-up rose to 70% for two teams compared to 9.1% at baseline.	Systematic, team-based application of depression screening can lead to increased detection of depression and appropriate follow-up care and should be considered for best practice in primary care.
Siu, A. L., United States Preventive Service Task Force. (2016)	I	N/A	Population: United States population, aged 18 and older Problem: Depression	A systematic review of the literature pertaining to depression, screening methodologies, and outcomes was performed.	N/A	Systematic depression screening and follow-up care are a recommended, effective means of depression detection and treatment whose benefits outweigh potential negative consequences.	Routine systematic depression screening with follow-up is recommended for all adults, which provides support for initiation and continuation of such programs across the country.

Super, S., Wagemakers, M. A., ,Picavet, H., Verkooijen, K. T., & Koelen, M. A. (2015)	VII	Salutogenesis Sense of Coherence	Population: Adult Purpose: To discuss how empowerment and reflection can strengthen sense of coherence	N/A	N/A	Reflection appears to be key to meaning-related coping while empowerment appears to be integral to problem-based coping.	Future studies are encouraged to further identify strategies that can strengthen sense of coherence.
Walker, J., Wanat, M., Fielding, J., Martin, P., Petit, A., Burke, K. … Sharpe, M. (2017)	VI	Implementation science	Population: People with a diagnosis of major depression in the clinic setting Purpose: To elucidate the process of designing, implementing, and evaluating a multi-staged major depression screening and treatment program in the clinic setting	N/A	N/A	To be successful, a depression screening program must reliably identity depressed patients, have high-provider buy-in, and include effective treatment. It must be, systematic, well-designed, and the process must include factors such as collaboration, teamwork, training, and patient support.	Systematic depression screening systems can be organized and developed to effectively detect (and not miss) depression in patients and meet the screening and treatment needs of outpatient populations.

Whooley, M. A., (2016)	VII	N/A	Population: Depressed adults Purpose: To discuss the findings of the 2016 USPSTF Report and explore the question of which screening tool should be used	N/A	Comparison of the Two Question Instrument vs. the PHQ-2	Screening must be accompanied by collaborative care to be effective.	The Two Question Instrument is a valid, brief means of screening patients for depression, which has implications for use in the clinical setting.
World Health Organization (2018)	VII	N/A	Population: people of all ages Problem: Depression disease burden	N/A	N/A	Depression is identified as a leading cause of morbidity and mortality. Strategies and programs can and are being undertaken to effectively combat depression globally.	Strategies such as WHO lay training, Gap Action Programme, and other resources to help countries navigate mental health are models of means by which other countries and organizations can help mitigate mental illness and depression.

Appendix C: Clinician Training Test

Depression Screening in Outpatient Neurology: Provider Pre-Training Survey

Favorite color: _____ **First 3 initials of your high school: ___ ___ ___**

Demographic Information:

Resident: ◯ Specialty: _____

Student: ◯ Major: _____

Fellow: ◯ Specialty: _____

Attending: ◯ Specialty: _____

Gender: Male ◯ Female ◯ Neutral ◯

Part A

Instructions: Please read each question carefully and ***select the best response***:

1. Which next-step action is best when patients self-test positive for suicidal ideation?
    a. emergency intervention must be immediately provided and documented
    b. the validating physician should further question the patient to confirm intention and capability to carry out a suicide attempt
    c. the patient should be scheduled for follow-up in two weeks for close monitoring
    d. administer a suicide severity questionnaire to the patient
2. A severity score of 4 suggests what level of depression?
    a. None
    b. Moderate
    c. Moderately severe
    d. Severe
3. Which of the following is the proposed intervention for a severity score of 17?
    a. None
    b. Watchful waiting
    c. Repeat the PHq-9 at the next follow-up
    d. Active pharmacotherapy intervention
4. Which of the following is an appropriate intervention for a severity score of 27?
    a. Watchful waiting
    b. Repeat the PHQ-9 at the next follow-up
    c. Active pharmacotherapy intervention
    d. Immediate pharmacotherapy and expedited specialist referral
5. Which scenario may yield a PHQ-9 false positive?
    a. The patient underwent a traumatic experience the week before PHQ-9 testing
    b. The patient suffers from chronic illness
    c. The patient speaks Spanish

d. The screener knows the patient personally

Part B

Instructions: Please check the response that best fits your ***level of agreement with each statement.***

	Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree
1. Screening for depression using a brief self-report tool is a good idea					
2. Screening neurology patients for depression in the outpatient neurology setting is beneficial to these patients					
3. Depression is common enough to warrant routine screening					
4. I am confident in screening neurology patients for depression					
5. I am likely to screen neurology patients for depression					

*Adapted from the PND Attitudes and Screening Acceptability Questionnaire with permission from Dr. Sarira El-Den (El-Den, O'Reilly, & Chen, 2018).

Depression Screening in Outpatient Neurology: Provider Post-Training Survey

Favorite color: _____ _____ _____ **First 3 initials of your high school:** _____ _____ _____

Part A

Instructions: Please read each question carefully and ***select the best response***:

1. Which next-step action is best when patients self-test positive for suicidal ideation?
    a. emergency intervention must be immediately provided and documented
    b. the validating physician should further question the patient to confirm intention and capability to carry out a suicide attempt
    c. the patient should be scheduled for follow-up in two weeks for close monitoring
    d. administer a suicide severity questionnaire to the patient
2. A severity score of 4 suggests what level of depression?
    a. None
    b. Moderate
    c. Moderately severe
    d. Severe
3. Which of the following is the proposed intervention for a severity score of 17?
    a. None
    b. Watchful waiting
    c. Repeat the PHq-9 at the next follow-up
    d. Active pharmacotherapy intervention
4. Which of the following is an appropriate intervention for a severity score of 27?
    a. Watchful waiting
    b. Repeat the PHQ-9 at the next follow-up
    c. Active pharmacotherapy intervention
    d. Immediate pharmacotherapy and expedited specialist referral
5. Which scenario may yield a PHQ-9 false positive?
    a. The patient underwent a traumatic experience the week before PHQ-9 testing
    b. The patient suffers from chronic illness
    c. The patient speaks Spanish
    d. The screener knows the patient personally

Part B

Instructions: Please check the response that best fits your ***level of agreement with each statement.***

	Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree
1. Screening for depression using a brief self-report tool is a good idea					
2. Screening neurology patients for depression in the outpatient neurology setting is beneficial to these patients					
3. Depression is common enough to warrant routine screening					
4. I am confident in screening neurology patients for depression					
5. I am likely to screen neurology patients for depression					

*Adapted from the PND Attitudes and Screening Acceptability Questionnaire with permission from Dr. Sarira El-Den (El-Den, O'Reilly, & Chen, 2018).

Comments:

_____

_____

_____

_____

_____

_____

Appendix D: English Demographic Questionnaire

Depression Screening in Outpatient Neurology Demographic Questionnaire

1. Which category below includes your age

- ○ 18-20
- ○ 21-29
- ○ 30-39
- ○ 40-49
- ○ 50-59
- ○ 60 or older

2. What is your race

- ○ White
- ○ Black
- ○ American Indian or Alaskan Native
- ○ Native Hawaiian or Pacific Islander
- ○ Multiple Races
- ○ Other _____

3. What is your ethnicity

- ○ I am not Spanish, Hispanic, or Latino
- ○ Mexican
- ○ Mexican-American
- ○ Chicano
- ○ Puerto Rican
- ○ Cuban
- ○ Cuban-American
- ○ Other Spanish, Hispanic, or Latino Group

Appendix E: Spanish Demographic Questionnaire

Evaluacion de la Depression en Pacientes Ambulatorios del Area de Neurologia
Demographic Questionnaire

4. En que categoria esta sue edad?

- ○ 18-20
- ○ 21-29
- ○ 30-39
- ○ 40-49
- ○ 50-59
- ○ 60 or older

5. Cual es tu raza?

- ○ Blanco
- ○ Negro
- ○ Indio Americano o Nativo de Alaska.
- ○ Nativo de Hawaii o Isla del Pacifico
- ○ Razas multiples
- ○ Otro _____

6. Cual es tu origan etnico/ de donde viniste

- ○ No soy Hipano o Latino
- ○ Mexicano
- ○ Mexicano-Americano
- ○ Chicano
- ○ Puerto Ricano
- ○ Cubano
- ○ Cubano-Americano
- ○ Other Espanol, Hispano

Appendix F: NSU Consent to be in a Research Study Entitled

Depression Screening in Outpatient Neurology

Who is doing this research study?

This person doing this study is Lakicia Foster with the Department of Nursing at Nova Southeastern University. She will be helped by Dr. Henson-Evertz (advisor) and Dr. Lori Lupe (project chair).

Why are you asking me to be in this research study?

You are being asked to take part in this depression screening study because you are an adult neurology patient.

Why is this research being done?

The purpose of this study is to screen all patients for depression according to national recommendation that all adults be screened for depression in the U.S.

What will I be doing if I agree to be in this research study?

You will be taking a one-time, anonymous survey. The survey will take 5 minutes to complete. The survey will be a part of your participation in a depression screening protocol at this site. You will be consenting to participation in this screening process, receiving resulting intervention recommendation from the provider, and giving permission for the publication of your anonymous survey results as part of the study results.

Are there possible risks and discomforts to me?

This research study involves minimal risk to you. To the best of our knowledge, the things you will be doing have no greater risk of harm than you would have in everyday life and doctor's visit.

What happens if I do not want to be in this research study?

You can decide not to participate in this research at any time at no penalty or diminished care to you. You can exit the survey at any time.

Will it cost me anything? Will I get paid for being in the study?

There is no cost for participation in this study. Participation is voluntary and no payment will be provided.

How will you keep my information private?

Your responses will be published with your consent. However, all published information will remain anonymous. Information we learn about you in this research study will be handled in a confidential manner, within the limits of the law and the HIPPA Privacy Rule. All data will be secured in password protected files. This data will be available to the researcher, the Institutional Review Board and other representatives of this institution, and any granting agencies (if applicable). All confidential data will be electronically saved and kept securely password protected, accessible only by medical staff overseeing your care and the project lead. All data will be kept for 36 months from the end of the study and destroyed after that time by secure deletion.

Who can I talk to about the study?

If you have questions, you can contact Lakicia Foster.

If you have questions about the study but want to talk to someone else who is not a part of the study, you can call the Nova Southeastern University Institutional Review Board (IRB) at (954) 262-5369 or toll free at 1-866-499-0790 or email at IRB@nova.edu.

Do you understand and do you want to be in the study?

If you have read the above information and voluntarily wish to participate in this research study, please complete the attached survey electronically or on paper.

Adult Signature Section

Your signature documents your permission to take part in this research study.

Printed Name of Participant	Signature of Participant	Date

Appendix G: NSU IRB Short Form Consent to be in a Research Study

What is this form?

You are being asked to take part in a research study.

Before you agree to take part, someone will explain to you:

- Why you are being asked to take part in research
- The purposes of the research
- How long you will be in the research
- What will happen to you
- What is experimental
- Risks or discomforts to you
- Benefits to you or others
- Other choices you might have
- Who will see your information
- You volunteer to be in a research study
- Whether or not you take part is up to you
- You can choose not to take part.
- You can agree to take part and later change your mind
- Your decision will not be held against you
- You can ask all the questions you want before you decide

Who can I talk to about the study?

If you have questions now, feel free to ask us. If you have additional questions, concerns, comments or complaints later or you wish to report a problem, which may be related to this study, please contact the research team with the information provided to you on the oral summary sheet.

This research has been reviewed and approved by the Institutional Review Board (IRB) at Nova Southeastern University, the committee that reviews research on human participants. You may contact them at 954-262-5369 or irb@nova.edu. You may also visit NSU IRB website at www.nova.edu/irb/information-for-research-participants for further information.

When applicable, someone will explain to you:

- Whether you will get treated or paid if injured
- The possibility of unknown risks
- When you may be taken off the research without your agreement
- Added costs from taking part

- What will happen if you stop taking part
- Steps to safely stop taking part
- When new information will be told to you
- The number of people expected to take part
- That the US Food and Drug Administration may inspect the records
- What happens to collected data if you stop taking part
- An explanation of www.ClinicalTrials.gov

Research Consent & Authorization Signature Section

Adult Signature Section

Your signature documents your permission to take part in this research study.

Printed Name of Participant	Signature of Participant	Date

Appendix H: The Patient Health Questionnaire

PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

Over the last 2 weeks, how often have you been bothered by any of the following problems? *(Use "✓" to indicate your answer)*	**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 or 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 are 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

FOR OFFICE CODING

0 + _____ + _____ + _____

=Total Score: _____

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

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
…	…	…	…

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.

Appendix I: PHQ-9 (Spanish Version)

CUESTIONARIO SOBRE LA SALUD DEL PACIENTE-9 (PHQ-9)

Durante las <u>últimas 2 semanas</u>, ¿qué tan seguido ha tenido molestias debido a los siguientes problemas? *(Marque con un " " para indicar su respuesta)*	**Ningún día**	**Varios días**	**Más de la mitad de los días**	**Casi todos los días**
1. Poco interés o placer en hacer cosas	0	1	2	3
2. Se ha sentido decaído(a), deprimido(a) o sin esperanzas	0	1	2	3
3. Ha tenido dificultad para quedarse o permanecer dormido(a), o ha dormido demasiado	0	1	2	3
4. Se ha sentido cansado(a) o con poca energía	0	1	2	3
5. Sin apetito o ha comido en exceso	0	1	2	3
6. Se ha sentido mal con usted mismo(a) – o que es un fracaso o que ha quedado mal con usted mismo(a) o con su familia	0	1	2	3
7. Ha tenido dificultad para concentrarse en ciertas actividades, tales como leer el periódico o ver la televisión	0	1	2	3
8. ¿Se ha movido o hablado tan lento que otras personas podrían haberlo notado? o lo contrario – muy inquieto(a) o agitado(a) que ha estado moviéndose mucho más de lo normal	0	1	2	3
9. Pensamientos de que estaría mejor muerto(a) o de lastimarse de alguna manera	0	1	2	3

FOR OFFICE CODING *0* + _____ + _____ + _____

=Total Score: _____

Si marcó <u>cualquiera</u> de los problemas, ¿qué tanta <u>dificultad</u> le han dado estos problemas para hacer su trabajo, encargarse de las tareas del hogar, o llevarse bien con otras personas?

No ha sido	Un poco difícil	Muy difícil	Extremadamente difícil
☐	☐	☐	☐

Appendix J: Site Approval Letter

Nova Southeastern University
3301 College Avenue
Fort Lauderdale, FL 33314-7796

Subject: Site Approval Letter

To whom it may concern:

This letter acknowledges that I have received and reviewed a request by *Lakicia Foster* to conduct a research project entitled "*Depression Screening in Outpatient Neurology*" at [redacted], and I approve of this research to be conducted at our facility.

When the researcher receives approval for his/her research project from the Nova Southeastern University's Institutional Review Board/NSU IRB, I agree to provide access for the approved research project. If we have any concerns or need additional information, we will contact the Nova Southeastern University's IRB at (954) 262-5369 or irb@nova.edu.

Sincerely,

Kester Nedd
Managing Director

Appendix K: Letter of Permission to Use and Adapt Questionnaire

Dr Sarira El-Den

14/02/2019

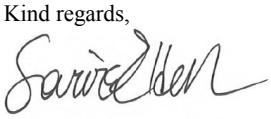
To whom it may concern,

I, the undersigned, Dr Sarira El-Den, give permission to Lakicia Foster (Doctoral Candidate) to use and adapt the PASAQ (instrument) for the purpose of her Doctoral Studies, only. Lakicia has indicated that any doctoral research conducted using the PASAQ will clearly indicate the changes/modifications made to the PASAQ and cite the original paper, authored by myself and my colleagues:

- El-Den S, O'Reilly CL, Chen TF. Development and Psychometric Evaluation of a Questionnaire to Measure Attitudes Toward Perinatal Depression and Acceptability of Screening: The PND Attitudes and Screening Acceptability Questionnaire (PASAQ). *Evaluation & the health professions* 2018:163278718801434.

Please do not hesitate to contact me if I can provide any further information.

Kind regards,



Dr Sarira El-Den
Lecturer
The University of Sydney School of Pharmacy
Faculty of Medicine and Health

+61 2 8627 6417 | +61 438 016 905

sarira.el-den@sydney.edu.au