

2018

Screening for Major Depression in Elderly Primary Care Patients Using the Patient Health Questionnaire-2 (PHQ-2)

Judith Karimi

Follow this and additional works at: https://scholarworks.umass.edu/nursing_dnp_capstone



Part of the [Nursing Commons](#)

Karimi, Judith, "Screening for Major Depression in Elderly Primary Care Patients Using the Patient Health Questionnaire-2 (PHQ-2)" (2018). *Doctor of Nursing Practice (DNP) Projects*. 159.

Retrieved from https://scholarworks.umass.edu/nursing_dnp_capstone/159

This Campus Access is brought to you for free and open access by the College of Nursing at ScholarWorks@UMass Amherst. It has been accepted for inclusion in Doctor of Nursing Practice (DNP) Projects by an authorized administrator of ScholarWorks@UMass Amherst. For more information, please contact scholarworks@library.umass.edu.

SCREENING FOR MAJOR DEPRESSION IN ELDERLY PRIMARY CARE PATIENTS
USING THE PATIENT HEALTH QUESTIONNAIRE-2 (PHQ-2)

Judith W. Karimi

University of Massachusetts, Amherst College of Nursing

DNP Project Chair: Dr. Pamela Aselton

DNP Project Mentor: Dr. Michael McCormick

Date of Submission: April 30th, 2018

Table of Contents

Abstract6

Introduction and Background.....7

 Problem Statement9

Review of the Literature10

Evidence Based Practice Model/Theoretical Framework15

Implementation Plan/Procedure16

Project Design and Methods17

 Objectives & Expected Outcomes18

Project Site and Population20

 Organizational “Gap” Analysis of Project Site20

 Evidence of Stakeholder Support.....21

Measurement Instrument(s)21

 Data Collection Procedures22

 Ethical Considerations/Protection of Human Subjects.....23

Results24

 Sample Characteristics24

 Cost-Benefit Analysis/Budget27

 Provider Pre and Post-test Scores28

Discussion/Interpretations32

 Setting Facilitators and Barriers32

 Provider/Patient/System Barriers32

 Suggestions for Improvement33

Strength and Limitations33

Implications for Practice34

Conclusion36

References39

Appendix 46

 Appendix A (Andersen Model)46

 Appendix B (Behavioral Model of Late Life Depression)46

 Appendix C (Patient’s Health Questionnaire-2 (PHQ-2)47

 Appendix D (Pretest Questionnaire)48

 Appendix E (Posttest Questionnaire)49

 Appendix F (Barriers to Screening)50

 Appendix G (USPSTF Analytic Framework for Depression).....51

 Appendix F (UMass IRB Approval)52

List of Tables

Table 1: Goals, Objectives & Expected Outcomes18

Table 2: Characteristics of Sample Population.....24

Table 3: Prevalence of Depression.....25

Table 4: Post Intervention PHQ-2 Scores.....26

Table 5: The Cost of Depression.....27

Table 6: Description Statistics of Pre-test Scores.....29

Table 7: Descriptive Statistics of Post-test Scores.....31

DEDICATION

This project is dedicated to my parents Patrick and Margaret Karimi. To my loving parents, thank you for being my champions. It's your unconditional love, support, guidance, and encouragement, which pushed me to succeed. You both have been my inspiration, and I hope I have made you proud. To my dear mom, you have been a source of motivation and strength, especially during those moments of despair and discouragement. Your motherly love, care, advice, prayers, and moral support have been a great source of comfort during the most difficult times. Finally, to my siblings Stanley, Tony, Kathy and Michael, I want to thank you for your tremendous support during this journey and for always believing in me.

ACKNOWLEDEMENTS

I would like to give a special thank you to my DNP committee chair, Dr. Pamela Aselton, who helped me develop this project and focus on the many tasks needed to graduate. Without your guidance this would not have been possible. I would also like to thank my other committee members, Dr. Michael McCormick and Bill Lee, for serving as my mentor. I will be forever grateful for your guidance, kindness and for sacrificing your time to ensure that I was successful.

To Bill, your love, patience, kindness, leadership and moral support, is what has helped me grow, and I would not be where I am today without you. Thank you for guiding me on the right path, for opening my eyes to new stages of opportunity, and for being such a great role model. Lastly, to my dear friend Theresa Mathis, thank you for your countless prayers, your willingness to listen, and for your endless sacrifices, they all have not gone unnoticed.

Finally, I would like to thank the patients and healthcare workers at Phelps Medical Associates, and the faculty at the University of Massachusetts, College of Nursing for facilitating this DNP-project. The tremendous support given by your organizations both personally and professionally have helped me to accomplish far more than I had thought was possible. So I thank you for this opportunity.

Abstract

Background: Depression is one of the most common mental health disorders addressed in primary care with a lifetime prevalence of 12.2%. Current depression screening rates are low, with only 2.0% of primary care visits having depression screening suggesting that the vast majority of older adult patients suffering from depression do not receive adequate treatment.

Methods: The goal of this quality improvement project was to increase depression screening rates in an outpatient primary care setting in Upstate New York. This was accomplished by implementing the PHQ-2 screening tool for depression screening in adults over the age of 65. The goal was for providers to screen at least 30 to 40 patients within a three-month period.

Results: At the end of the 12-week time period, a total of 212 patients were screened for depression. Providers were interviewed on their use of the tool, and the number of patients screened, treated or referred, were reported. Nineteen patients were referred to a mental health provider or prescribed an antidepressant. Twenty seven were referred for counseling, and sixty four were given a follow-up appointment for further evaluation. The theoretical framework was used to optimize primary care, and assist the primary care clinic, in merging towards an integrated behavioral health care model. **Conclusion:** Screening for depression in primary care, helps to increase access to quality health care and services. Implementing the project led to the integration of a depression screening program that will be used in the medical clinic to improve the outcomes of patients with depression. Increasing the number of patients screened for depression, will decrease the incidence of suicide among older adults, and help ensure all older adults who are at risk are identified and offered treatment.

Keywords: depression, depression screening, primary health care, mental health, quality indicators, quality of health care, older adults.

Introduction

An estimated eighty percent of older adults with depression receive their treatment in primary care settings; while 10% of these older adults have significant clinical depression (Park & Unützer, 2011). Depression is highly prevalent in the general population, and is associated with significant suffering and disability (O'Connor et al., 2009; Santos, Huang, Menezes, & Scazufca, 2016). At 12.2% lifetime prevalence, depression is one of the most common mental health disorders addressed in primary care (Duhoux et al., 2012). Depression is also a chronic condition that is substantially under diagnosed and undertreated in primary care settings (Saver et al., 2007).

Furthermore, despite the availability of effective treatments, such as antidepressant medications and psychotherapies, the routine care that is often received by depressed patients is wholly inadequate and ineffective (Saver et al., 2007; Schoenbaum et al., 2002). Yet the numerous studies that have highlighted a gap in the treatment of depression, evidence-based practices for depression have not been fully implemented in primary care settings (Duhoux et al., 2012; Post et al., 2009). Moreover, efforts to increase primary care provider's (PCP) knowledge of appropriate depression treatments, and to provide proper tools for identifying patients with depression, have resulted in minimal impact on outcomes (Post et al., 2009).

Background

Currently, there is substantial evidence to support that primary care providers fail to identify 30-50% of older adults with depression (Agency for Healthcare and Quality, 2013); thus older primary-care patients tend to report far more disability associated with depression than community-dwelling older adults (Yates et al., 2004; Arean & Ayalon, 2005). Since most of these primary care providers lack adequate training to adequately assess depression, or have

insufficient time to assess mental health issues, or are uncomfortable working with depressed older adults (Gray & Dihingo, 2015; Arean & Ayalon, 2005). Primary care presents a key opportunity for identifying older adults with depression (Park, 2011). Thus, the implementation of systematic screening has often been advocated by depression experts as a means of improving detection, treatment, and outcomes of depression (Agency for Healthcare and Quality, 2013).

The American Geriatrics Society recommends using the patient health questionnaire-2 (PHQ-2), as a screening tool to aid in the identification of depression in older adults (Maurer & Darnall, 2012). It has been further postulated that approximately 10-15% of older adults seen in primary care settings, do not present or fit the typical picture of a depressed adult; thus it is expected that at least 5% of the patient population, via the use of the PHQ-2 screening tool, would screen positive for depression (Sanchez, Eghaneyan, & Trivedi, 2016).

Given that the current depression screening rates are astoundingly low, and knowing that only about 2.0% of primary care visits document that actual depression screening was performed. The increase in identification via the implementation of a screening program would most likely increase depression screening rates significantly. Also the current prevalence rates ranging anywhere from 20% to 55%, suggests that the vast majority of older adult patients suffering from depression do not receive adequate treatment (Duhoux et al., 2012). Moreover, the quality indicators that account for patient education about depression screening reveal large disparities ranging from 20% to 90% (Duhoux et al., 2012).

Furthermore, despite the numerous studies that have highlighted an important gap in the treatment and management of depression (Santos et al, 2016; Duhoux et al, 2012), the primary care setting presents an important opportunity for the detection and treatment of geriatric depression (Park & Unützer, 2011). Given the fact that most primary care providers fail to

identify older adult patients as being depressed; implementation of a systematic screening program may be of use in improving positive outcomes in depressed older adult patients (O'Connor et al., 2009). Hence, depression screening is predicated on the notion that early depression identification will allow timely and effective treatments to be delivered, and that the benefits of such treatment will outweigh any subtle risks or harm (O'Connor et al., 2009).

Additionally, the analysis of the project site will look at the three key areas; (1) measure the gaps against benchmarks, used by the Agency for Health Care Research and Quality (AHRQ) through the use of a quality tool that provides a systematic method of comparing current practices with industry best practices; (2) determining the barriers to instituting industry best practices; and (3) the feasibility of implementing best practices by the target organization (AHRQ, 2017). This analysis will lead to the determination of what gaps exist between those in need of depression screening, and those receiving the actual care/treatment in the primary care clinic (Duhoux et al., 2012). To determine the primary care capacity gap, a service gap analysis for the primary care clinic will be developed and will conclude with recommendations for those identified gaps between national recommendations and widespread clinical practice.

Problem Statement

The risk of depression among the elderly is indicated by increased morbidity and mortality, and results from lack of evidence-based care in the primary care setting. The implementation of evidence-based intervention for depression, which would include routine screening, is recommended (Shoenbaum et al., 2002; Ell, 2006; Saver et al., 2007). The lack of depression screening, and the high rates of depression among older adults, are associated with poor health outcomes, and often have serious consequences for the patient, the patient's family, and the community at large (Weise 2011; Maurer & Darnall, 2012). Furthermore, depression

presents a significant public health problem, with the rates of geriatric depression ranging from 5-10% (Arean & Ayalon, 2005). This failure to adequately screen, or the absence of effective evidence-based screening tools, has led to devastating consequences. These consequences include geriatric patients committing suicide, within months of contact with a primary-care provider (Arean & Ayalon, 2005; Raue, Ghesquiere & Bruce, 2014); thus indicating that depression is routinely under-diagnosed, often misunderstood, and undertreated, within the primary care settings (Bruce et al., 2005; Dearman et al., 2007; Arean & Ayalon, 2005).

Review of the Literature

A comprehensive systematic search using PubMed, CINAHL, Nursing Ovid, Psycinfo, Academic Search Premier, Medline and Google Scholar database was conducted using a combination of keywords such as: *depression in primary care, quality indicators for depression in primary care, treatment of depression in primary care, quality care for major depression, and adequacy of depression treatment*. Once the articles had been identified, an appraisal was done to determine which articles were relevant, and applicable to the literature review. A total of 40 articles were obtained from the Google Scholar database, and a total of ten articles from PubMed. For these articles to be incorporated into the project, they had to have been published in scientific peer-reviewed journals between 2002 and 2016, and they were full-text research articles published in English. Exclusion criteria included research publications, editorial and opinion pieces conducted outside of the United States and Canada.

Lack of Screening in Primary Care.

Duhoux and colleagues (2012) conducted a multilevel analysis study using a sample of 915 adults. The objective of this study was to estimate the proportion of primary care patients who meet the DSM-IV criteria for major depressive episode; and had received adequate

treatment as assessed by indicators derived from clinical practice guidelines (Duhoux et al., 2012). The second objective was to examine individual and organizational characteristics associated with the receipt of at least one minimally adequate treatment for depression (Duhoux et al., 2012). Results from this study suggest that interventions are needed to increase the extent to which primary mental health care conforms to evidence based practice recommendations (Duhoux et al., 2012). Such interventions should target specific populations, by enhancing accessibility to psychotherapy, family practitioners, and interventions that provide support to primary care practitioners in their clinical practice with patients undergoing treatment for depression (Duhoux et al., 2012).

Saver and colleagues conducted a semi-structured qualitative study. They analyzed 15 subjects who had been recruited from two primary care clinics and were currently undergoing treatment for major depression (Saver et al., 2007). The objective was to identify gaps and barriers that were amendable to interventions and that could improve depression care for future patients (Saver et al., 2007). The results from the study demonstrated that majority of the subjects, had recurrent depression, had reported barriers to obtaining information about depression, and its treatment options, including reports of multiple visits to primary care practitioners without the question of depression being raised (Saver et al., 2007). These findings suggest that quality improvement efforts should address not only screening and follow-up but patient education about depression and treatment options along with elicitation of treatment preferences (Saver et al., 2007).

Reluctance to Prescribe Antidepressants in Primary Care.

A meta-analysis by Gilbody et al., of studies in which clinicians were randomly presented with the results of a depression screen also examined whether those patients subsequently

received interventions for depression (Gilbody, Sheldon, & Wessely, 2006). The notification had a borderline significant effect on increasing any intervention (RR = 1.30, 95% CI = 0.97–1.76), but the heterogeneity was large ($I^2 = 81\%$), with studies that randomized only high-risk patients tending to show a larger effect size than those that randomized unselected patients (Gilbody, Sheldon, & Wessely, 2006). When the analysis focused on the prescription of antidepressants, there was no difference between the intervention and the control group (RR = 1.20, 95% CI = 0.87–1.66). These findings suggest that when provided with the results of all positive depression screens, even on selected cases, clinicians might be minimally inclined to do something, but not necessarily to prescribe antidepressants (Gilbody, Sheldon, & Wessely, 2006).

Effectiveness of Screenings.

A study by O'Connor, Whitlock, Beil, and Gaynes (2009), found that among the subset of patients who were depressed, screened patients were more likely than unscreened patients to be in complete depression remission upon follow-up. These studies suggest that feedback of screening results alone is not effective in reducing depressive symptoms. Rather, feedback of screening results, together with interventions to treat depression, leads to remission of depression compared to non-treated patients. However, it is impossible to determine the impact of screening alone for these studies with successful depression interventions.

Screening Tools in Primary Care Settings

A systematic review conducted by Williams et al. (2009) failed to yield any data describing health outcomes among screened and unscreened populations, or any studies examining the harms of screening. Although the study had methodological limitations with regards to the use and accuracy of depression screening instruments among older adults. The U.S. Preventive Services Task Force (USPSTF) guidelines recommends screening for depression

in primary care settings, where providers are prepared to accurately diagnosis and provide effective treatment and follow-up (Maurer, 2012).

Several screening instruments have therefore been developed as tools to guide early detection of depression and clinical decision making (Richardson et al., 2010). The most highly recommended tools that meet the DSM-IV criteria for major depression is the Geriatric Depression Scale (GDS), the Patient Health Questionnaire-2 (PHQ-2), the Cornell Scale for Depression in Dementia (CSDD), and the Patient Health Questionnaire-9 (PHQ-9) (Kroenke, Spitzer, & Williams, 2003; Spitzer et al., 1999). These screening tools can be easily administered, interpreted by a variety of providers, or have good predictive properties, and are specifically designed as depression screening and diagnostic instruments, to be used in clinical practice and research settings (Kroenke, Spitzer, & Williams, 1999, Richardson et al., 2010).

Screening Implementation

A systematic review of the literature conducted by Stanford (2015) found that many primary care providers struggle to implement a screening and diagnosis program for depression in primary care due to factors that serve as barriers to depression screening. To proactively address barriers to depression screening Ell (2006) identified the organizational strategies that may facilitate the implementation of a successful depression screening program to include multifaceted quality improvement disease management interventions that change the way depression care is delivered, such as: (1) implementation of routine depression screening; (2) systematic application of evidence-based practice guidelines; (3) use of clinical decision-making protocols and algorithms; (4) providing follow-up through remission and maintenance; and (5) enhancing the role of nurses or social workers as depression care managers, as well as integration between primary care and mental health specialists or service systems.

Importance of Screening, Treatment and Follow-up

Schoenbaum et al. (2002) conducted an observational analysis using a sample of 938 adult patients with depressive disorder. The objectives was to screen 27,332 consecutive patients in participating practices; and to evaluate the effects of evidenced-based depression treatment in primary care mainly on patients' clinical health status, and employment outcomes in the first six months of follow-up. The principal findings from this study demonstrate that at six months, those patients with appropriate care/treatment compared to those without it, had lower rates of depressive disorder, better mental health-related quality of life, and higher rates of employment. These findings indicate that when appropriate evidence-based depression screening, treatment, and follow-up is provided to diverse group of patients in community-based primary care settings, there is substantial improvement in clinical outcomes, quality of life outcomes, and employment status.

Summary

In conclusion, this literature review provides substantial evidence that when screening for depression in the absence of other interventions, depression screening may not be effective (Luchin, 2010). As exemplified by these research studies, the use of treatment algorithms by general practitioners in patients with geriatric depression may be associated with adequate treatment at the primary care level (Duhoux et al., 2012). Additionally, by quantifying the number of patients with depression, these research studies suggest that the method used for identifying geriatric depression may have substantial impact on the relationship between major depression and the use of healthcare services (Druss, Rask, & Katon, 2008 & Sanchez et al., 2016). Lastly, the findings from these research studies serve as a reminder that symptoms of

major depression and treatment for those disorders may have different and at times competing effects on the use of mental health services (Druss, Rask, & Katon, 2008).

Theoretical Framework/Evidence Based Practice Model

This quality improvement project incorporated Andersen's Behavioral Model of Health Care Service Use, as a theoretical framework to explore factors related to mental health care service use among older adults with depression (Graham et al., 2017; Parker, et al., 2013; Duhoux et al., 2012). This conceptual model was used to identify individuals and contextual factors potentially associated with adequate treatment of depression for older adults (Babitsch, Gohl, & Lengerke, 2012).

According to Park and Colleagues (2013), this model (Appendix A) suggests that there are three factors that affect health behavior, which include: (1) predisposing factors, including demographics, social characteristics, and individual beliefs, (2) needs factors, such as an individual's self perceived need for treatment and a practitioner's evaluation of the disease, (3) enabling factors, such as personal resources that facilitate or are a barrier to access, as well as the availability of health care services in the community. This conceptual model can be readily applied to the geriatric population, as it includes issues specific to the depressed older adult population or age group.

In order to successfully implement this quality improvement model for depression, key stakeholders were required to understand the relevant organizational structure and processes of the primary care setting (Post et al, 2009). The application of the model to this DNP project involved focusing on discrete elements of care coordination, and mapping out what behaviors need to change (McDonald et al., 2007). Under the guidance of this theoretical framework, depression screening measurements were used, as an indirect marker for preventative service

utilization (Jahangir, Irazole, & Rubinstein, 2012). Furthermore, screening for depression would improve the practitioner's ability to recognize depression, and thereby provide the impetus for more adequate treatment that would improve overall outcomes for patients suffering from geriatric depression.

Implementation Plan

The implementation plan for this QI project incorporated the six different steps as identified in the Model for Evidence-Based Practice Change (Larrabee, 2004; Ciliska et al., 2011).

The first step involved the identification of the problem and assessment of the need for change in practice, which incorporated stakeholders such as clinicians, patients and nurses. This assessment was performed prior to the implementation of the project, through statements by clinicians and patients regarding the need for effective depression screening (Stafford, 2015).

The second step was planning an intervention and the desired outcome. The third step was to focus on finding the best and most current evidence. For step two and three the plan was to review the literature for successful depression screening programs at other organizations; review evidence that supports depression screening tools; review evidence supporting national recommendations regarding depression screening; and finally review the literature addressing barriers to depression screening (Stafford, 2015).

The fourth step was the design of the practice implementation plan/change. The planning of the practice change consisted of three parts (Larrabee, 2004; Ciliska et al., 2011). The first part of the planned practice change was to evaluate the current depression screening rates at the primary care clinic. The second part of the practice change consisted of a provider educational session regarding current depression screening rates and the planned initiation of depression

screening within the clinic. The final component consisted of the actual implementation of the PHQ-2 screening tool within the clinic (Stafford, 2015; Mitchell et al., 2013; Fann et al, 2009).

Step five included the evaluation of the pre-and-post tests scores and verbal feedback from providers to decide if the practice change would be adapted, adopted, or rejected. Finally, the last step was integration and maintenance of the practice change. This step was completed after the evaluation and recommendations regarding the practice change were made at the conclusion of this project (Larrabee, 2004; Ciliska et al., 2011; Stafford, 2015).

Project Design and Methods

The primary goal of this DNP quality improvement project was to increase depression screening rates, and the identification of persons with depression, in an outpatient primary care setting. This was accomplished by implementing the PHQ-2 screening tool to facilitate depression screening in geriatric patients. Since geriatric depression requires a clinical evaluation by a healthcare professional trained in evaluating both the diagnostic criteria symptoms and other medical problems associated with depression (Snowden et al., 2009). This goal was accomplished by training all key stakeholders to identify the possible symptoms of depression, thus improving detection and depression outcomes.

The second goal was to increase the utilization of the screening tool from 2.0% to 50% within three months in the primary care setting. This was accomplished through the use of the PHQ-2 screening tool by ancillary medical staff, to aid the provider(s) in identifying geriatric patients with depression, especially when symptoms may be subtle, masked, or confounded by comorbidities (Roman & Callen, 2008). Additionally, a positive screening test may trigger a diagnostic interview by the primary care provider, using the standard diagnostic criteria (USPSTF, 2010).

The third goal was to introduce the depression screening process and monitoring protocol, by providing each patient, clinician, and ancillary medical staff, those depression educational materials designed by the DNP student. In addition to the handouts, an annotated list of all local mental health specialists, was developed and disseminated to the geriatric patients and their depression care managers, who were then responsible for following-up with the geriatric patients.

The fourth goal was to improve depression screening practices, coordination, and continuity of care for older adults with depression, by quantifying the number of referrals generated from routine depression screening. This was done by (1) assessing the knowledge of depression screening, treatment, and related referrals using a pretest-posttest design before, immediately after, and one month post intervention; (2) identifying the process and system changes needed for implementing the PHQ-2 screening process; and (3) evaluating the effectiveness of the PHQ-2 questionnaire which was disseminated to screen for geriatric depression during a primary care visit.

Table 1:
Goals, Objectives, and Expected Outcomes

Goals	Objectives	Expected Outcomes
1) To increase depression screening rates and the identification of persons with depression in an outpatient primary care setting.	(a) To implement the PHQ-2 screening tool to facilitate depression screening in geriatric patients. (b) To survey trends in diagnosis, treatment and referral rates for depression before and after implementation of screening tool. (c) To train all key stakeholders to identify symptoms of depression,	(a) 90% adherence to the screening process/guidelines by clinicians, nurses, and ancillary medical personnel. (b) 50% of geriatric patients who screen positive for depression will not continue to screen positive 8-weeks later. (c) 95% key stakeholders engagement/education/staff

	thus improving detection and depression outcomes.	assisted depression care and management support.
2) To increase the utilization of the screening tool from 2.0% to 50% within three months in the primary care setting.	<p>(a) To increase the use of the PHQ-2 screening tool by ancillary staff, to aid the provider(s) in identifying geriatric patients with depression.</p> <p>(b) A positive screening test will trigger a diagnostic interview by the primary care provider, using the standard diagnostic criteria.</p> <p>(c) To identify older adults at risk for depression, and direct them for appropriate mental health services.</p>	<p>(a) At least 90% adherence to annual depression screening will increase recognition of depression.</p> <p>(b) At least 85% of geriatrics with a positive screening test will be given a mental health referral or prescribed an antidepressant.</p> <p>(c) Integration of mental health services into primary health care.</p>
3) To introduce the depression screening process and monitoring protocol to each patient and provider.	<p>(a) To provide each patient, clinician, and ancillary medical staff the depression educational materials designed by the DNP student to increase knowledge of depression.</p> <p>(b) To develop and disseminate an annotated list of all area mental health specialists, to the geriatric patients and their depression care managers.</p>	<p>(a) Pre-and-post intervention scores will be used to assess knowledge of depression.</p> <p>(b) Maintain follow-up of all geriatrics patients newly identified as depressed to ensure they do not fall through the cracks.</p>
4) To improve depression screening practices by quantifying the number of referrals generated from depression screening	<p>(a) To assess the knowledge of depression screening, treatment, and referrals.</p> <p>(b) To identify process and system changes needed for implementing the PHQ-2 screening process in primary care.</p> <p>(c) To evaluate the effectiveness of the PHQ-2 questionnaire in detecting geriatric depression.</p>	<p>(a) Performance metrics will be used to monitor the process and outcomes of screening including mental health integration/referral.</p> <p>(b) Depression screening application will be used to increase provider awareness and prevalence of depression in their own practice; and to improve the performance and care the clinic provides.</p>

Project Site and Population

This DNP project took place in a primary care practice which primarily serves patients in Westchester and Putnam counties in the state of New York, as well as Stamford, Connecticut. This premier medical practice is designated as a level three patient centered medical home, which is the highest recognition for a medical group. This practice provides a wide range of comprehensive primary and preventive services that are patient-centered and evidence-based. As a medical group, their mission is to deliver compassionate, community-based medical care of the highest quality.

This medical group and its team of medical professionals provide services to an urban population, that is mostly Medicare or Medicaid insured, and 90% are non-Hispanic white. A majority of their older patient population lives independently within the community setting, or semi-independently with home supervision; while approximately 15% reside in assisted or long-term care facilities (Abrams et al., 2015). Since many of these older patients have multiple comorbidities, the patients who met the diagnostic criteria for major depression, or who screened positive for depression using the PHQ-2 screening tool, were the target population for this quality improvement project. These participants were deemed eligible for inclusion, if they were 65 years of age or older, able to speak and understand English, and able to provide informed consent. Exclusion criteria included patients who were non-English speaking; had sensory or cognitive impairment; and developmental delay severe enough that it precluded them from meaningful participation in screening for depression (Abrams et al., 2015).

Organizational analysis of project site. As a full service, medical group, the primary care practice is immersed in an integrated health care system that includes primary care physicians and specialists. This extensive network of physicians and specialty practices include:

allergy/immunology, cardiology, dermatology, endocrinology, gastroenterology, neurology, ophthalmology, obstetrics/gynecology, pediatrics, plastic surgery, podiatry and urology. The interdisciplinary team consists of two physicians, nurse practitioners, nurses, certified medical assistants, and clerical staff. As a body of diversified care givers, the members of this team are specialty trained and dedicated to the care they provide. The team of medical providers is also multilingual, multicultural, and religiously diverse. This ensures that the medical staff can meet the many needs of their patients, who come from all corners of the globe.

Evidence of stakeholder support. A stakeholder meeting to discuss the agenda of implementing the depression screening tool and to facilitate its integration into the primary care clinic was held. All stakeholders agreed to the long-term goal of integrating and coordinating the screening process, while sharing the responsibility of screening for depression. The depression care manager agreed to help shape the political dynamics associated with this change, by supporting the implementation process, and by getting the support of key stakeholders. By providing anchor and mentoring to those practitioners nervous about the implementation of the screening process, this would help stabilize the organization, and facilitate the successful implementation of the project. The depression care manager also did provide assurance to the medical team, about what was not going to change, what changes would occur in the screening process, and the need for the change.

Measurement Instruments

The most commonly used screening instrument in primary care settings is the patient health questionnaire-2 (Appendix C). This tool was used for this project, as it is the most viable and reliable screening instrument for depression among the elderly (Richardson et al., 2010). The tool has shown to have good diagnostic validity among large samples of geriatric patients, and

has the greatest sensitivity (100%) and specificity (77%) for screening for depression (Kroenke et al., 2003).

The PHQ-2 is a time-saving tool that can be used in clinical practice as a first step in depression screening (Arroll et al., 2010; Richardson et al., 2010). The tool can be used to identify depressed patients who require further clinical evaluation using the PHQ-9 instrument (Richardson et al., 2010). Third, the tool is cost-effective for patients not previously identified as depressed, and can be incorporated into the electronic health record. Fourth, the tool can improve clinical outcomes in primary care settings, where mental health providers are lacking (Spitzer, Kroenke, & Williams, 1999; Luchins, 2010). The PHQ-2, which is an abbreviated version of the PHQ-9, can be a valuable tool, in assisting primary care physicians with screening for depression (Richardson et al., 2010; Arroll et al., 2010).

The tool comprises the first two items of the PHQ-9 that evaluates the degree to which a patient has experienced depressed mood and anhedonia over the past 2-weeks (Kroenke et al., 2010). The PHQ-2 items are rated on a 4-point scale, ranging from 0 (*not at all*) to 3 (*nearly every day*), for a total score ranging from zero to six (Kroenke et al., 2010). By using a cutoff of 3 or greater, this tool has been found to have the greatest sensitivity and specificity for detecting major depression in older adult populations (Kroenke et al., 2003; Richardson et al., 2010).

Data Collection Procedures

This project lasted for a time period of 3-months, with data collection incorporated at multiple time points. The primary data was collected using the PHQ-2 assessment questionnaire, and completed by participants at three different time points throughout the intervention. Once potential participants had been identified, the medical assistant would inform them of the screening process, and obtain verbal and written consent. Upon consenting to the screening

process, eligible participants were invited into a private room to complete the assigned questionnaire. For those participants who could not read or write, they were assisted by the nurse and/or medical assistant, by reading out the questionnaire, and documenting the responses.

Survey forms were pre-packaged into a sealed envelope; and the forms were distributed and collected between 1st of October, 2017 till 31st of December, 2017. For those items that were not answered or were incorrectly answered by the participants, such items were transcribed into the electronic health record (EHR) as missing data. The completed questionnaires were forwarded to the data entry clerk/nursing assistant, who would enter the data into the EHR (Al-Qadhi, Rahman, Ferwana, & Abdulmajeed, 2014).

Ethics and Human Subjects Protection

The proposal was submitted to the University of Massachusetts Institutional Review Board (IRB) for approval. The project was initiated once the approval from the UMass IRB was received (Appendix F). All participants eligible to participate in the project were provided a written informed consent to participate in the project.

Participants were explicitly informed in writing that they could withdraw their consent to participate, without specification of reasons, and with no negative consequences to their future medical treatment. Eligible participants included older adults over the age of 65. Data was obtained via weekly EHR audits. During the DNP project, all data collected was kept in a secure location to ensure privacy. To maintain confidentiality and anonymity, individual identifiers such as name, birth date, or social security numbers were not used in data collection. Upon conclusion of the project, all data collected was destroyed.

Results

Over a six month period, four general practitioners and three care managers were trained, and two hundred and twelve participants were recruited.

Sample

In the pre-intervention phase, a total of ten staff members were invited to participate in the project including two physicians, two nurse practitioners, three nurses, two certified medical assistants, and a clerical staff. The mean age of participants was 48.6 years (SD=9.4 years). In terms of education, three had a doctoral level degree, one a master’s level degree, three a bachelor’s degree, two an associate’s degree, and one a certificate level degree. Providers and staff were given an information session in December 2017 and the project was completed in March 2018.

The total number of patients included in the survey analysis was 212, with 119 females (56.1%) and 93 were males (45.9%).

Table 2:

Characteristics of the sample population (N=212)

Sample Characteristics				
Age (years)	Minimum Age	65		
	Maximum Age	75		
	Mean Age (SD)	48.6 (SD=9.4)		
Gender n (%)	Female	56.1% (n=119)		
	Male	45.9% (n=93)		
TOTAL		100% (n = 212)		
Marital status	Single	18% (n=38)	Education	
	Married	53.4% (n=113)	High school grad	37% (n=17)
	Separated/Divorced	25% (n=53)	Some college	73% (n=34)
	Widowed	3.6% (n=8)	College +	85% (n=40)

TOTAL		100% (n=212)		
Ethnicity	Caucasian/White	57.5% (n=121)	African American	9.9 % (n=21)
	Latino/Hispanic	30.6% (n=65)	Asian/Mixed race	1.4% (n=3)

Of those included 53.4% were married, and 47% were between 65-to-75 years. A hundred and twenty two patients (57.5%) were white, 65 (30.6%) were Latino, 21 (9.9 %) were black, and 3 (1.4%) were Asian/Mixed race. The percentage of the total sample that screened positive for depression was recorded in a chart (see Table 3).

Table 3:

The prevalence of depression among older patients screened for depression

PHQ-2 Screening						
Category Scale	<i>Minimal</i>	<i>Mild</i>	<i>Moderate</i>	<i>Moderately Severe</i>	<i>Severe</i>	<i>Total</i>
# of patients	103	63.6	27	12	6.9	212
% of patients	49	30	12.5	5.5	3.0	100
Category Scale	<i>Absent</i>	<i>Present</i>	<i>PHQ-2 (0 or higher)</i>	<i>Referred to Mental Hlth</i>	<i>Referred to Counseling</i>	<i>Follow-up Appt.</i>
# of patients	103	109	46	18	27	64
% of patients	49	51	21	8.9	12.5	30

The screening was considered positive if the intake nursing note or encounter form was documented “screening positive” or “patient referred to provider” or “if affirmative responses to screening questions were noted.”

In the intervention phase, a total of 250 questionnaires were distributed to those eligible to receive the PHQ-2 questionnaire. Twenty-five patients (10%) refused to participate, and 17 (6.8%) were excluded from participation primarily because they already had a diagnosis of affective disorder, cognitive impairment, or developmental delay in their medical records. Of the

250 questionnaires completed, 15 (6%) incomplete questionnaires were rejected due to missing data. Over half of the patients (51.5%) included were exhibiting depressive symptoms on the basis of PHQ-2, of which 30% were mild, 12.5% moderate, 5.5% moderate-to-severe and 3.0% severe cases. For those patients' ≥ 65 years of age, seen in the past six months with a PHQ-9 screening tool, or had a negative PHQ-2 screening in the past year, were screened again.

Forty six patients (21%), scored 0 or higher on the PHQ-2 questionnaire. Nineteen patients (8.9%) out of the 46 were referred to a mental health provider or prescribed an antidepressant. Eleven patients (5.1%) out of the 19 reported they were receiving treatment for depression. Twenty seven (12.5%) out of the 46 were referred for counseling. A total of sixty four patients (30%) were given recommendations to schedule a follow-up appointment for further clinical evaluation. Of those sixty four patients only three failed to return for follow-up appointments (see Table 3).

At end of the 12-week time period, depression scores were significantly associated with female gender (p-value 0.039), and higher educational level (p-value 0.005).

Table 4:

Post-Intervention PHQ-2 score for depression in patients screened (N =119)

<i>Regression Analysis</i>				
	R	N (%)	M(SD)	P-value
Female gender		119 (56.1)		0.039
Age			48.6(9.4)	0.78
Baseline PHQ-2	R1= 0.69			0.30
Baseline PHQ-9	R2= 0.62			0.10
Education Level				0.005
Depression at baseline		46 (21)		
Depression at 12-weeks		19 (8.9)		
Change, n (%)		27 (58.6)		
Depression at baseline				

Regression analysis showed that PHQ-2 and 9 were strongly correlated $R_1 = 0.69$, and $R_2 = 0.62$ (see Table 4).

The pretest and posttest on the depression screening initiative were analyzed using descriptive statistics for all pre-and-post test questions. A weekly audit to monitor the healthcare provider and staff usage of the PHQ-2 depression screening tool was done by the DNP student. The PHQ-2 scores were placed in the EHR, by the intake nurse and/or nursing assistant (Sanchez, Eghaneyan, & Trivedi, 2016). This included the dates of screening and rescreening PHQ-2 scores. To enable the provider to interpret the PHQ-2 scores, an electronic notification embedded within the EHR software, was used to inform the provider which participant screened positive for depression (Sanchez, Eghaneyan, & Trivedi, 2016).

Cost-Benefits Analysis

A cost analysis to estimate the direct and indirect costs of depression, including the cost savings of screening for depression was conducted (Al-Qadhi, Rahman, Ferwana, & Abdulmajeed, 2014). The estimated costs for this quality improvement project included data collection, measurement, and analysis, the comparison of local data with national benchmark data, and the costs for the educational program and implementation of the project as presented in Table 5.

Table 5:

The cost of depression based on screening instrument PHQ-2 cut-off score ≥ 3

Direct Cost	Rating Basis	Unit Cost (Dollars)	Patients/100	Total	Comments
PHQ Screening	Once/month	20	100	2,000	
PCP Visits	3-visits/year	200	50	30,000	
Specialist Visits	6-visits/year	400	20	48,000	
Medication	One full year	300/month	50	180,000	
Hospitalization	14 days/year	2,500/day	8	280,000	
Total				540,000	
Indirect Cost	Rating Basis	Unit Cost (Dollars)	Patients/100	Total	Comments
Care-giver	20 days/year	8,000/month	30	240,000	
Suicide	Year 2016	450,000/life	2	900,000	
Total				1,140,000	
Grand Total				1,680,000	

Due to the availability of computer based documentation system, there was no capital investment required for this project. Also, given the overwhelming cost for depression treatment in the inpatient hospital setting, any new therapy that would allow patients to be treated in the outpatient setting/clinic could result in significant cost savings, especially for patients age 65 years or older (Niederman, et al., 1998). Others have estimated savings of up to 520 dollars (\$165) per patient screened once a year (Al-Qadhi et al., 2014).

Providers Pre and Post-test Scores

The pre-and-post test surveys were used to evaluate the provider’s knowledge and confidence with administering the PHQ-2 screening instrument. This was accomplished by

administering a pre-and-post test questionnaire to all participating providers (Appendix D & E).

Twelve pre-test surveys were distributed, but only four had responses. The results of the pre-and-posttest data are summarized in Table 6 and 7.

Table 6:

Descriptive Statistics of Pre-test Scores

	N(#)	Min.	Max.	Mean	M(SD)
How comfortable do you feel about using validated depression screening tools?	2	2	4	3.00	1.414
I have clinical experience in managing patients with major depression?	4	3	4	3.50	0.707
I am confident in my clinical experience in managing depression and have received formal training in mental health?	4	1	3	2.00	1.414
Is administration of depression screening tool by non-providers staff appropriate?	4	0	5	2.50	3.535
How often do you currently use a depression screening tool with patients?	3	2	4	3.00	1.414
Is the use of a depression screening tool in the primary care useful?	4	4	5	4.50	0.707
Depression is a serious medical condition that requires treatment?	4	4	5	4.50	0.707
Stigma is a major barrier to people accessing treatment for depression?	4	4	5	4.50	0.707

The pre-test survey revealed that all four providers (100%) had limited formal training with mental health treatment. The lowest pre-test score was one (strongly disagree) and the highest score was three (neutral). Three of the four providers (75%) stated that they only used a

depression screening tool less than (30%) of the time, with one of the provider's (25%) stating they used depression screening tools ninety-percent of the time. The lowest pre-test score was two (disagree) and the highest score was four (agree). Two of the four providers (50%) stated low comfort with depression screening tools. The lowest pre-test score was two (disagree) and the highest score was four (agree). One provider rated his comfort with depression screening tools at five (strongly agree) on the Likert scale.

All four providers (100%) stated they were comfortable with a depression screening instrument being administered by a non-provider medical staff, and the highest score was five (strongly agree). Providers also agreed that a depression-screening tool was useful in primary care; with all four providers stating depression screening could be useful 90% of the time. The lowest score was four (agree) and highest score was five (strongly agree).

In terms of having clinical experience in managing patients with major depression, the lowest score was three (neutral) and the highest score was four (agree). All four providers agreed that depression was a serious medical condition that requires treatment, and that stigma is a major barrier to patients accessing treatment for depression. The lowest score was four (agree) and the highest was five (strongly agree) on the Likert scale.

The post-test surveys were distributed, and eight responses were received. Four of eight providers (50%) stated they only used the PHQ-2 fifty-five percent of the time, with three providers (37%) reporting use of the PHQ-2 ninety-five percent of the time. Thus rating their use of the instrument as four (agree) on lowest score, and five (strongly agree) as the highest score. Although there was only a (17%) increase, two of three providers stated they were using the PHQ-2 more frequently compared with pre-test results.

After implementation, six of the eight providers (75%) rated their comfort with depression screening tools as five (strongly agree), with the other two providers (25%) rating their comfort as four (agree) on the Likert scale. By evaluating all eight provider responses, it is evident there was improved comfort with the screening tool, with all provider responses rating a four or five on the Likert scale. This overall increase in comfort demonstrates the positive effect that an education session and structured implementation plan can have on primary care providers.

Table 7:

Descriptive Statistics of Post-test Scores

	N(#)	Min.	Max.	Mean	M(SD)
How comfortable do you feel about using validated depression screening tools?	6	4	5	4.50	0.707
I have clinical experience in managing patients with major depression?	7	4	5	4.50	0.707
I am confident in my clinical experience in managing depression and have received formal training in mental health?	7	4	5	4.50	0.707
Is administration of depression screening tool by non-providers staff appropriate?	8	4	5	4.50	0.707
How often do you currently use a depression screening tool with patients?	4	4	5	4.50	0.707
Is the use of a depression screening tool in the primary care useful?	8	4	5	4.50	0.707
Depression is a serious medical condition that requires treatment?	8	4	5	4.50	0.707
Stigma is a major barrier to people accessing treatment for depression?	8	4	5	4.50	0.707

In summarizing, the pre-and-posttest data showed: (1) an increase in depression screening; (2) an increase in use of depression screening instruments; and (3) an increase in knowledge base after protocol implementation. Posttest data showed that (93%) of providers reported that they formally screened all patients compared to only (1%) stating they screened them pre-protocol. Pre-test data showed that (75%) of providers used a screening instrument 0 out of 10 encounters compared to posttest data which showed that (93%) used a screening instrument at least 8 out of 10 encounters. There was also a (78%) increase in knowledge base about depression screening among the providers post implementation of the screening protocol.

Discussion

Overall, the intervention was effective in increasing the rates of depression screening at the primary care setting. Initially, when presented to the providers during the educational session, the results of the initial retrospective chart review did not surprise the providers at the primary care clinic. Although previous reviews had been performed with similar results, using this knowledge and the Model for Evidence-Based Practice Change efforts were made to assist the medical clinic in making a sustainable change.

Provider-related barriers. Similar to the barriers listed in the literature review, in the survey providers listed limited time for depression screening as the primary barrier, while a second barrier listed was the lack of a readily available screening tool. Although the three practitioners may have agreed that the appointment time allocated to each patient was enough to assess and treat the patient's presenting complaints. Two of these practitioners expressed their disagreement that they did not have extra time to administer nor interpret the depression screening instrument. Additionally, one of these practitioners identified the lack of a screening tool as a barrier to depression screening; while two practitioners indicated that they were

unaware of any “depression screening template” that may be embedded in the electronic health records.

Patient-related barriers. In addition to depression screening obstacles that are related to primary care practice, providers were able to identify patient-related barriers to implementation of a successful depression screening program to include: (1) the patient’s perception of bias and cultural competence in health care, (2) family perceptions of care, (3) practical barriers such as cost and transportation to therapy, and (4) lack of educational support and ease of access to mental health specialists that may impede the receipt of care (Ell, 2006).

System-related barriers. Additionally, the identified system barriers included (1) lack of coordination and collaboration between providers in primary care; (2) inadequate continuity of care, and (3) shortage of nursing and social service professionals who have training and expertise in geriatric mental health (Ell, 2006). For these reasons, vulnerable patients may be unwilling or unable to utilize depression screening and risk assessment services, even if mental health services/specialists are available in the primary care setting.

Suggestions for Improvement. The key lesson for this health care organization is that providers must be vigilant in recognizing the complexities of detecting and managing depression, and attempt to reduce the barriers to good quality care. Thus, it is incumbent upon providers to organize their practices so as not to overlook the mental health problems of these vulnerable patients. It might be prudent to implement routine screening and assessment programs that will aid providers who may otherwise overlook the emotional distress of these vulnerable patients. Subsequently, if clinicians are educated about the symptoms of depression, providers will be well positioned to look for these symptoms, and thereby improve the accurate assessment and screening of depression in their older-adult population (Mitchell, Vahabzadeh, & Magruder,

2011). Therefore, this quality improvement project attempted to assist the primary care provider(s) in overcoming these barriers.

Strengths and Limitations

Although there were benefits to depression screening, there were several limitations to the approach that focused on depression alone. Clinicians within the primary care clinic have recognized the need to identify multiple mental health conditions including but not limited to depression (Mitchell, Vahabzadeh, & Magruder, 2011). However, only a handful of these clinicians are now beginning a new phase of screening in which outcomes such as emotional distress, unmet psychosocial needs, functional limitations, and the desire for help are the key to depression (Mitchell, Vahabzadeh, & Magruder, 2011).

Implications for Practice

The results from this quality improvement project demonstrate that stakeholders can work together with patients to identify and monitor depression screening within the primary care setting. Second, the results demonstrate that the use of PHQ-2 or a similar depression-screening tool can be an effective means of depression screening in a more diverse population. Thirdly, the findings have the potential to lead to the integration of a depression screening program in the primary care setting. Lastly, the findings provide valuable information about models of depression care that can be implemented and evaluated in a clinical setting (Palmer et al., 2015).

It has been further demonstrated that there is an accumulated knowledge base regarding the potential effectiveness of the integration of mental health services into primary care (Lake, & Turner, 2017). However, the remaining challenge is to find effective and efficient strategies not only to disseminate, but also to support the uptake, implementation, and sustainability of these interventions in the care of older adults with depression. By utilizing Andersen's Behavioral

Model of Healthcare Service Use (Anderson, 2008); the theoretical framework was used to determine which individual variables serve as barriers toward health care use (Fleury, Grenier, & Bamvita, 2015). This project built upon the model to assess the relationships and predictability between individual variables and behavioral health care utilization within an integrated health care model (Anderson, 2008; Lindsay Nour et al., 2009).

In applying Andersen's behavioral model of health care use and the model for evidence-based practice change. The models were used to optimize primary care, thus allowing individual's to receive better depression care, as well as to assist the primary care clinic, in merging towards an integrated behavioral health care model (Lindsay Nour et al., 2009). Given the rates of depression among older adults are rising, and are considered to be a significant public health problem. The purpose of this quality improvement project was to focus on three approaches to this problem: (1) the integration of a depression screening program within the primary care clinic; (2) the integration of depression screening into routine assessment of older adults; and (3) the integration of evidence-based interventions for depression by primary care providers, depression care managers, or by licensed mental health specialists/professionals, in partnership with the primary care clinic.

The design and implementation of a depression screening algorithm into the project, led to the integration of a depression screening program that will continue to be used in the primary care clinic, to improve the outcomes of patients with depression. It will also lead to an increase in the number of older adults screened for depression who will seek primary/mental health services. Lastly, it will lead to a decrease in the incidence of suicide among older adults, and reduce the health disparity of depression among this population.

In addition, since the chosen self-assessment questionnaire (PHQ-2) can dramatically improve depression detection rates. The primary care clinic was encouraged by the high rate of depression screening as achieved, suggesting that screening for depression is a feasible goal. Thus, providers will pursue implementation of routine depression screening using the chosen self assessment questionnaire.

Further work may be needed to evaluate the provider's perception of the screening tool and to identify why such tools are not being used on routine assessment of older adults. Further evaluation is also needed to explore situations in which the patient was screened positive for depression but was never referred to the appropriate mental health provider. Such tracking could include patient samples among several different primary care clinics, using different depression-screening tools, and confirmation of screened patients with the gold standard for measuring depression, such as the DSM-IV criteria (Ceccarini, Manzoni, & Castelnuovo, 2014, Gelaye et al., 2014).

This project analyzed whether the success of depression treatment relies on variables such as early detection, social support, type of medical illness, and other mitigating factors. Regardless of the screening tool or method used, the early detection of depression must be tailored to interventions, and treatments that are central to ensuring that all patients receive adequate intervention/treatment from depression.

Conclusion

The findings from this DNP Project demonstrate at least two factors that may be considered in an effort to improve primary care in older persons with depression. First, the successful treatment of depression may have the potential to mitigate not only the burden of this illness, but also depression's adverse effects on access to, and the comprehensiveness of medical

services provided (Druss, Rask, & Katon, 2008). Second, specialty mental health treatment may also be associated with difficulties in coordination and continuity of medical care. Therefore, models that target treating depression in primary care may have the potential to improve depressive symptoms while not jeopardizing, and perhaps improving, quality of medical care, and its cost (Druss, Rask, & Katon, 2008).

This project supports the following:

- 1) There is a need for depression screening in older adult patients in the primary care;
- 2) Primary care providers should be trained and made aware of the benefits of screening for major depression and appropriately refer patients for mental health follow up;
- 3) Patients should receive education about depression in order to understand the perils of untreated depression, and the benefits of depression treatment so as to achieve better quality of life. Overall, this evidence-based quality improvement project proves the merits and importance of screening for depression at the primary care level.

Finally, there is a paucity of data despite the recommendations made by the World Health Organization (WHO), the American Academy of Family Physicians (AAFP), and the U.S. Preventive Services Task Force (USPSTF), that support screening adults for depression in primary care practices that have systems in place to accurately diagnose, effectively treat, and provide follow-up (WHO, 2013; AAFP, 2012; & USPSTF, 2015). Such systems, although in place for some time, have failed to demonstrate improvements in the health status of older adults seen in primary care clinics (Saver et al., 2007).

Several of the potential barriers identified to implementing a screening tool within the primary care clinic include: (1) concerns about stigmatizing the patient with a psychiatric diagnosis; (2) time pressure/limited appointment time to screen for depression; (3) productivity

pressures to detect, screen and manage depression; (4) inadequate knowledge about diagnostics criteria; (5) the cost of screening or treatment options; (6) limited resources to screen for depression within the office; (7) lack of systematic approaches to detecting and managing depression; (8) limited community resources/mental health coverage to treat and follow-up on positive screens; and (9) potential limited knowledge regarding screening recommendations and screening tools (Ell, 2006; Park & Unützer, 2012; Stafford, 2015).

In conclusion, although there is direct evidence of the isolated health benefits of depression screening in primary care clinics. The totality of the evidence supports the benefits of screening older adult populations, particularly in the presence of additional treatment supports, such as care management, treatment protocols, and availability of specialty trained depression care providers (O'Connor et al., 2016). The indirect evidence shows that depression screening instruments can identify adults, including older adults, who need further evaluation and may need treatment for depression, and that depression treatment is likely to be effective (O'Connor et al., 2016).

References

- Abrams et al., (2015). Psychiatric assessment and screening for the elderly in primary care: Design, implementation, and preliminary results. *Journal of Geriatrics*, 2015, 1-9.
Doi.org/10.1155/2015/792043
- Al-Qadhi, W., Rahman, S., Ferwana, S.M., & Abdulmajeed, A.I. (2014). Adult depression screening in Saudi primary care: Prevalence instrument and cost. *BMC Psychiatry*, 14, 190. Doi: 10.1186/1471-244X-14-190
- American Academy of Family Physicians (2012). *Summary of recommendations for clinical preventive services*. Retrieved from
http://www.aafp.org/online/etc/medialib/aafp_org/documents/clinical/CPS/rcps08-2005.Par.0001.File.tmp/October2012SCPS.pdf
- Andersen, R.M. (2008). National health surveys and the behavioral model of health services use. *Medical Care*, 46, 647–653.
- Areán, A.P., & Ayalon, L. (2005). Assessment and treatment of depressed older adults in primary care. *Clinical Psychology, Science and Practice*, 12(3), 321-335.
- Arroll, B., Goodyear-Smith, F., Crengle, S., Gunn, J., Kerse, N., Fishman, T.,....Hatcher, S. (2010). Validation of PHQ-2 and PHQ-9 to screen for major depression in the primary care population. *Annals of Family Medicine*, 8(4), 348–353.
- Babitsch, B., Gohl, D., & von Lengerke, T. (2012). Re-revisiting Andersen’s behavioral model of health services use: A systematic review of studies from 1998–2011. *GMS Psycho-Social-Medicine*, 9, (11), 1-15. doi.org/10.3205/psm000089
- Ceccarini, M., Manzoni, M., & Castelnuovo, G. (2014). Assessing depression in cardiac patients: What measures should be considered. *Depression Research and Treatment*, 2014, 1-18.

- Ciliska, D., Dicenso, A., Melnyk, B.M., Fineout-Overholt, E., Stetler, C.B., Cullen, L.,...Dang, D. (2011). Models to guide implementation of evidence-based practice. In Melnyk, B.M. and Fineout-Overholt, E. *Evidence-Based Practice in Nursing and Healthcare* (pp. 254-257). Philadelphia, PA: Wolters Kluwer, Lippincott, Williams, & Wilkins.
- Choo, Y.W., Hairi, N.N., Sooryanarayana, R., Yunus, M.R., Hairi, M.F., Ismail, N.,...Bulgiba, A. (2016). Elder mistreatment in a community dwelling population: The Malaysian elder mistreatment project (MAESTRO) cohort study protocol. *BMJ Open* 6(5), 1-13.
- Dearman, P.S., Waheed, W., Nahoo, V., & Baldwin, C.R. (2007). Management strategies in geriatric depression by primary care physicians and factors associated with the use of psychiatric services: A naturalistic study. *Journal of Aging & Mental Health*, 10(5), 521-524.
- Duhoux, A., Fournier, L., Gauvin, L., & Roberge P. (2012). Quality of care for major depression and its determinants: A multilevel analysis. *BMC Psychiatry*, 12(142), 1-15.
- Ell, K. (2006). Depression care for the elderly: Reducing barriers to evidence based practice. *Home Health Care Services Quarterly*, 25(1-2), 115–148.
- Fann, J. R., Berry, D.L., Wolpin, S., Austin-Seymour, M., Bush, N., Halpenny, B., ...McCorkle, R. (2009). Depression screening using the patient health questionnaire-9 administered by touch screen computer. *Psycho-oncology*, 18(1), 14-22.
- Fiske, A., Wetherell, J.L., & Gatz, M. (2009). Depression in older adults. *Annual Review of Clinical Psychology*, 5, 363–389.
- Fleury, M., Grenier, G., & Bamvita, J. (2015). Predictors of frequent recourse to health professionals by people with severe mental disorders. *The Canadian Journal of Psychiatry*, 60(2), 77-86.

- Graham, A., Hasking, P., Brooker, J., Clarke, D., & Meadows, G. (2017). Mental health service use among those with depression: an exploration using Andersen's Behavioral Model of Health Service Use. *Journal of Affective Disorders, 208*, 170-176.
- Gelaye, B., Tadesse, M.G., Williams, M.A., Fann, J.R., Stoep, A.V., & Zhou, X.-H.A. (2014). Assessing validity of a depression screening instrument in the absence of a gold standard. *Annals of Epidemiology, 24*(7), 527–531.
- Gilbody, S., Sheldon, T., & Wessely, S. (2006). Should we screen for depression? *BMJ, 332*(7548), 1027–1030.
- Haugen, W., Haavet, O. R., Sirpal, M. K., & Christensen, K. S. (2016). Identifying depression among adolescents using three key questions: a validation study in primary care. *The British Journal of General Practice, 66*(643), 65–70.
- Hurley, C. M., Arthur, M. H., Chessex, C., Paul, O., Turk-Adawi, K., & Grace, S. L. (2017). Burden, screening, and treatment of depressive and anxious symptoms among women referred to cardiac rehabilitation: a prospective study. *BMC Women's Health, 17*, 11. doi.org/10.1186/s12905-017-0367-1
- Jahangir, E., Irazole, V., & Rubinstein, A. (2012). Needs, enabling, predisposing, and behavioral determinants of access to preventative care in Argentina: Analysis of national survey of risk factors. *PLOS ONE, 7*(9), 1-6.
- Kroenke, K., Spitzer, R.L., & Williams, J.B. (2003). The patient health questionnaire-2: Validity of the two-item depression screener. *Medical Care, 41*(11), 1284-1292.
- Kroenke, K., Spitzer, R. L., Williams, J. B. W., & Löwe, B. (2010). The patient health questionnaire somatic, anxiety, and depressive symptom scales: A systematic review. *General Hospital Psychiatry, 32*(4), 345–359.

- Larrabee, J.H. (2004). Advancing quality improvement through using the best evidence best evidence to change practice. *Journal of Nursing Care Quality*, 19(1), 10-13.
- Lake, J., & Turner, M.S. (2017). Urgent need for improved mental health care and a more collaborative model of care. *The Permanente Journal*, 21, 17–24.
- Lindsay Nour, B.M., Elhai, J.D., Ford, J.D., & Frueh, B.C. (2009). The role of physical health functioning, mental health, and sociodemographic factors in determining the intensity of mental health care use among primary care medical patients. *Psychological Services*, 6(4), 243-252.
- Luchins, D.J. (2010). Depression screening as a quality indicator. *Mental Health in Family Medicine*, 7(2), 107–113.
- Maurer, M.D., & Darnall, R.C. (2012). Screening for depression. *American Family Physician*, 85(2), 139-144.
- McDonald, K.M., Sundaram, V., Bravata, D.M. (2007). *Conceptual frameworks and their application to evaluating care coordination interventions*. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK44008/>
- Mitchell, J.A., Vahabzadeh, A., & Magruder, K. (2011). Screening for distress and depression in cancer settings: 10 lessons from 40 years of primary-care research. *Journal of the Psychological, Social and Behavioral Dimensions of Cancer*, 20, 572-584.
- Mitchell, J., Trangle, M., Degnan, B., Gabert, T., Haight, B., Kessler, D., Vincent, S. (2013). *Adult depression in primary care*. Retrieved from https://www.icsi.org/guidelines__more/catalog_guidelines_and_more/catalog_guidelines/catalog_behavioral_health_guidelines/depression

- Niederman, M.S., McCombs, J.S., Unger, A.N., Kumar, A., & Popovian, R. (1998). The cost of treating community acquired pneumonia. *Clinical Therapy*, 20(4), 820-837
- O'Connor, E. A., Whitlock, E. P., Beil, T. L., & Gaynes, B. N. (2009). Screening for depression in adult patients in primary care settings: A systematic evidence review. *Annals of Internal Medicine*, 151(11), 793-803.
- O'Connor, E., Rossom, R.C., Henninger, M., Groom, H.C., Burda, B.U., Henderson, J.T.,.....Whitlock, E.P.(2016). *Screening for depression in adults: An updated systematic evidence review for the U.S. Preventive Services Task Force*. Rockville, MD: Agency for Healthcare Research and Quality.
- Palmer, C., Vorderstrasse, A., Weil, A., Colford, C., & Dolan-Soto, D. (2015). Evaluation of a depression screening and treatment program in primary care for patients with diabetes mellitus: Insights and future directions. *Journal of the American Association of Nurse Practitioners*, 27(3), 131-136.
- Park, S.Y., Cho, S., Park, Y., Bernstein, K. S., & Shin, J. K. (2013). Factors associated with mental health service utilization among Korean American immigrants. *Community Mental Health Journal*, 49(6), 765-773.
- Park, M., & Unützer, J. (2011). Geriatric depression in primary care. *Psychiatric Clinics of North America*, 34(2), 469-x doi.org/10.1016/j.psc.2011.02.009
- Post, E. P., Kilbourne, A. M., Bremer, R. W., Solano, F. X., Pincus, H. A., & Reynolds, C. F. (2009). Organizational factors and depression management in community-based primary care settings. *Implementation Science*, 4, 84. doi:10.1186/1748-5908-4-84
- Raue, P. J., Ghesquiere, A. R., & Bruce, M. L. (2014). Suicide risk in primary care: Identification and management in older adults. *Current Psychiatry Reports*, 16(9), 466.

- Richardson et al., (2014). Collaborative care for adolescents with depression in primary care: A randomized clinical trial. *JAMA*, 312(8), 808-816.
- Richardson, L.P., Rockhill, C., Russo, J.E., Grossman, D.C., Richards, J., McCarty, C., ... Katon, W. (2010). Evaluation of the PHQ-2 as a brief screen for detecting major depression among adolescents. *Pediatrics*, 125(5), e1097–e1103.
- Roman, W.M., & Callen, L.B., (2008). Screening instruments for older adult depressive disorders: Updating the evidence-based toolbox. *Issues in Mental Health Nursing*, 29, 294-941.
- Saver, G. B., Van-Nguyen, B. A., Keppel, B.A., & Doescher, P. M. (2007). A qualitative study of depression in primary care: Missed opportunities for diagnosis and education. *Journal of the American Board of Family Medicine*, 20(1), 28-35.
- Santos, R.E., Huang, H., Menezes, R.P., & Scazufca, M. (2016). Prevalence of depression and depression care for populations registered in primary care in two remote cities in the Brazilian Amazon. *PLOS ONE* 11(3), 1-13. doi:10.1371/journal.pone.0150046
- Sanchez, K., Eghaneyan, H.B., & Trivedi, H.M. (2016). Depression screening and education: Options to reduce barriers to treatment (DESEO) protocol for an educational intervention study. *BMC Health Service Research*, 16, 322. doi:10.1186/s12913-016-1575-3
- Schoenbaum, M., Unützer, J., McCaffrey, D., Daun, N., Sherbourne, C., & Wells, B.K. (2002). The effects of primary care depression treatment on patients' clinical status and employment. *Health Services Research*, 35(5), 1145-1158.
- Snowden, M., Steinman, L., Frederick, J., & Wilson, N. (2009). Screening for depression in older adults: Recommended instruments and consideration for community based practice. *Clinical Geriatrics*, 17(9), 26-32.

Spitzer, R. L., Kroenke, K., & Williams, J. B. (1999). Validation and utility of a self-report version of PRIME-MD: The PHQ primary care study. *Journal of the American Medical Association*, 282(18), 1737-1744. doi:10.1001/jama.282.18.1737.

Stafford, M.K. (2015). *DNP practice inquiry project report: Depression screening in primary care*. Retrieved from

http://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1051&context=dnf_etds

U.S. Preventive Services Task Force (2015). *Depression in adults: Screening*. Retrieved from <http://www.uspreventiveservicestaskforce.org/Page/Topic/recommendationssummary/depression-in-adults-screening>

U.S. Preventive Services Task Force (2010). Screening for depression in adults:

Recommendation statement. *American Family Physician*, 82(8), 976-979.

Williams, S.B., O'Connor, E.A., Eder, M., & Whitlock, E.P. (2009). Screening for child and adolescent depression in primary care settings: a systematic evidence review for the US Preventive Services Task Force. *Pediatrics*, 123(4) e716-e735.

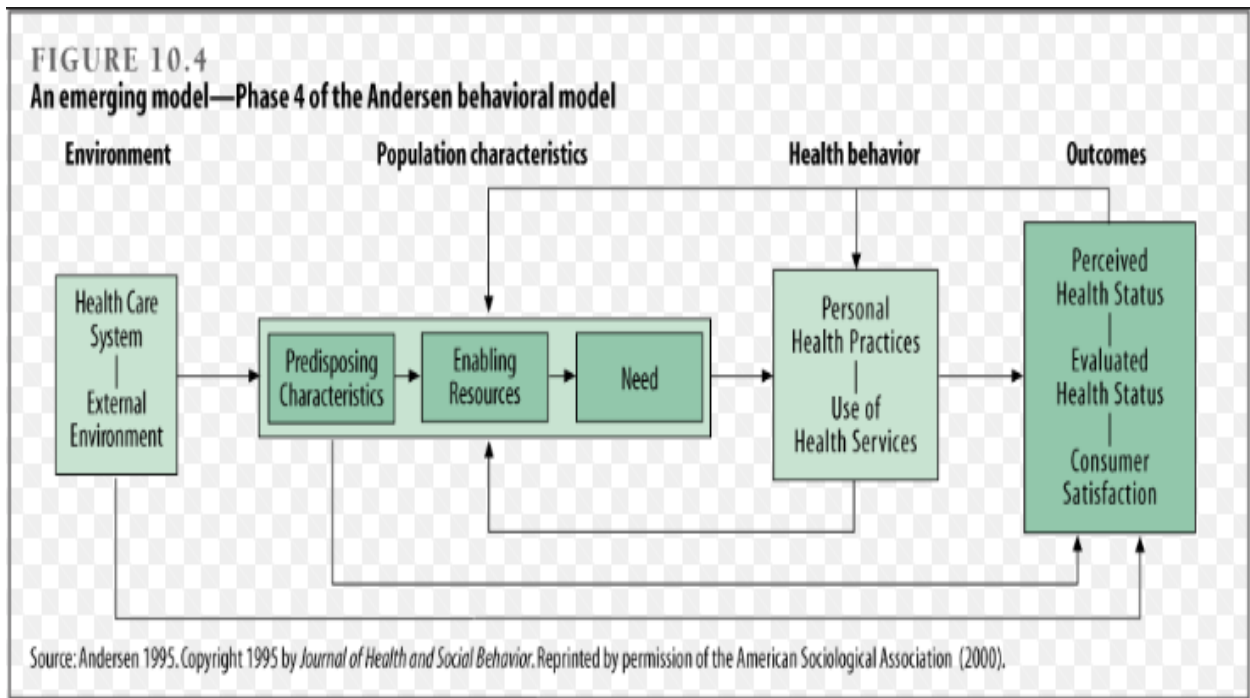
World Health Organization (2012). *Depression*. Retrieved from <http://www.who.int/mediacentre/factsheets/fs369/en/b>

World Health Organization (2013). *Mental health action plan 2013-2020*. Retrieved from

http://apps.who.int/iris/bitstream/10665/89966/1/9789241506021_eng.pdf?ua=1

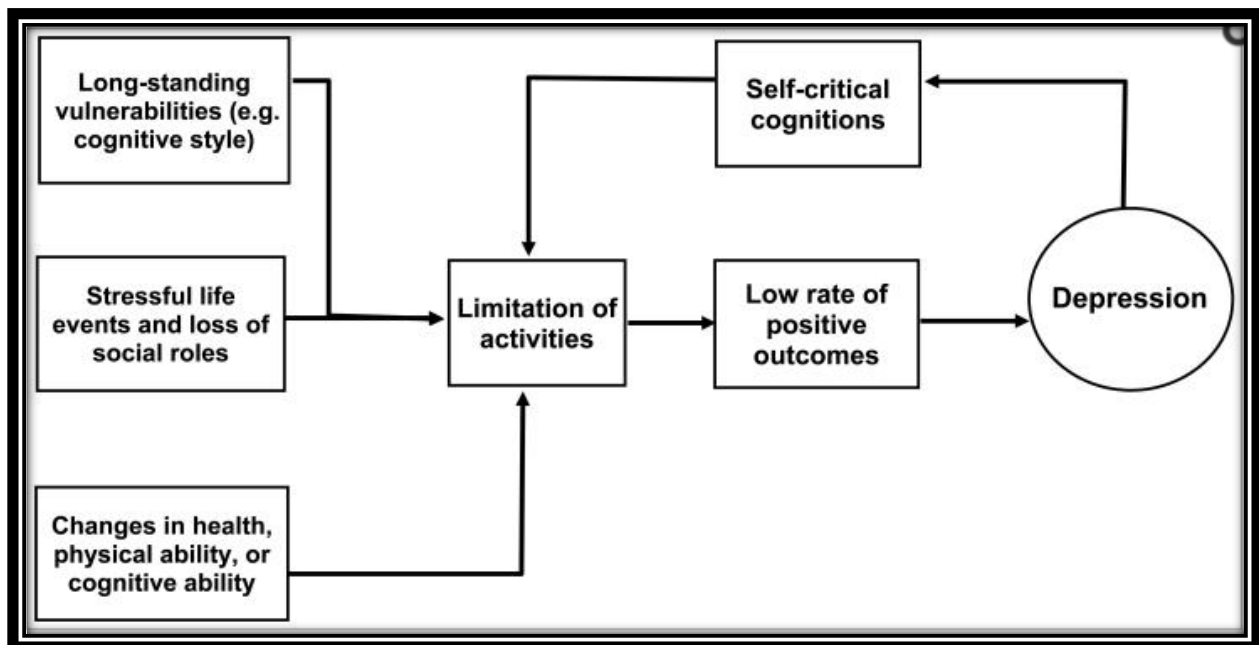
Appendix A

Sample Diagram of the Andersen Behavioral Model



Appendix B

Sample Diagram on Behavioral Model of Late Life Depression



Appendix C

The PHQ-2 Screening Tool

The Patients Heath Questionnaire-2 (Short Form)				
Site Name: ----- Patient's Name: ----- Date of Visit: ----- Initials of Interviewer: ----- Date of Screening: -----				
During the past 2-weeks, how often have you been bothered by any of the following problems?	Not At All	Several Days	More Than Half The Days	Nearly Every Day
1) Little interest or pleasure in doing things?	0	1	2	3
2) Feeing down, depressed or hopeless?	0	1	2	3
Total Score: -----				

Appendix D

Pretest Questionnaire/Survey

Please indicate how strongly you agree or disagree with the following statements. If unsure, please provide your best guess.

SURVEY QUESTIONS	Strongly agree	Agree	Somewhat agree	Disagree	Strongly disagrees
1. How comfortable do you feel about using validated depression screening tools?	5	4	3	2	1
2. I have clinical experience in managing patients with major depression?	5	4	3	2	1
3. I am confident in my clinical experience in managing depression and have received formal training in mental health?	5	4	3	2	1
4. Is administration of depression screening tool by non-providers staff (such as MA) appropriate?	5	4	3	2	1
5. How often do you currently use a depression screening tool with patients?	5	4	3	2	1
6. Is the use of a depression screening tool in the primary care useful?	5	4	3	2	1
7. Depression is a serious medical condition that requires treatment?	5	4	3	2	1
8. Stigma is a major barrier to people accessing treatment for depression?	5	4	3	2	1

Please **note**: by returning this questionnaire, you are giving your consent to participate.

Appendix E

Post-test Survey (12 weeks post-intervention)

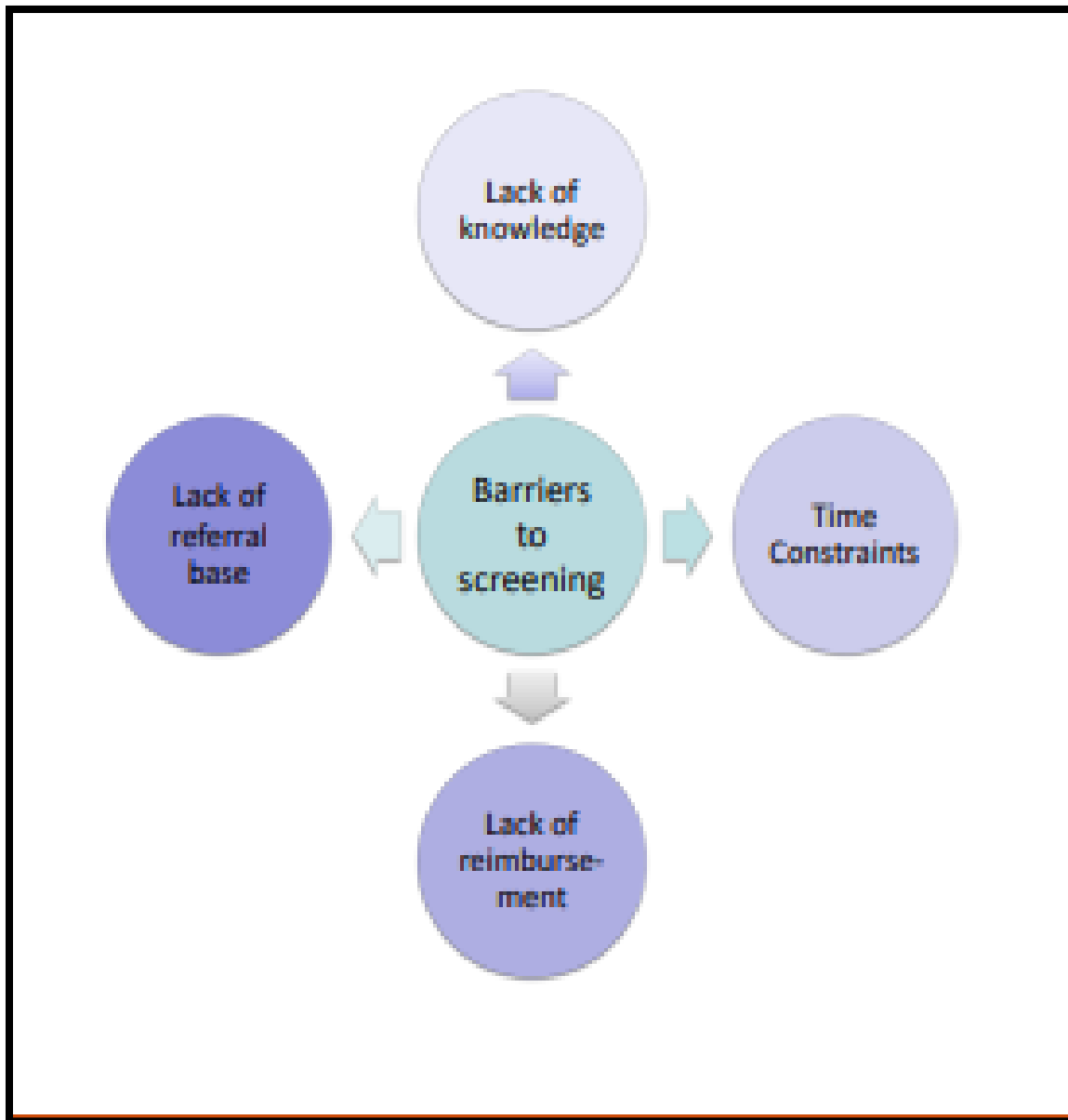
- 1. The provider handout was helpful? Yes No
- 2. The depression screening handout was helpful? Yes No
- 3. Did the implementation of a depression screening tool help? Yes No

SURVEY QUESTIONS	Strongly agree	Agree	Somewhat agree	Disagree	Strongly disagree
1. How comfortable do you feel about using validated depression screening tools?	5	4	3	2	1
2. I have clinical experience in managing patients with major depression?	5	4	3	2	1
3. I am confident in my clinical experience in managing depression and have received formal training in mental health?	5	4	3	2	1
4. Is administration of depression screening tool by non-providers staff (such as MA) appropriate?	5	4	3	2	1
5. How often do you currently use a depression screening tool with patients?	5	4	3	2	1
6. Is the use of a depression screening tool in the primary care useful?	5	4	3	2	1
7. Depression is a serious medical condition that requires treatment?	5	4	3	2	1
8. Stigma is a major barrier to people accessing treatment for depression?	5	4	3	2	1

Thank you for taking the time to fill out this questionnaire. Your participation and feedback is highly appreciated and will help to determine how best to implement depression screening into primary care practice.

Appendix F

Barriers to Depression Screening



Appendix G

USPSTF Analytic Framework for Depression

