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Improving Recognition and Treatment of Depression among
Women using PHQ-9 during Office Visits

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July 6, 2022

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Dedication

I dedicate this quality improvement project to all women suffering in silence due to lack of care and fear of stigmatization from depression. May this project help to advance their care and improve health outcomes.

Acknowledgements

The completion of this Doctor of Nursing program could not have been possible without the intervention of the Almighty. I give all glory to God my creator for ordering my steps in the right directions since my conception till this day.

I would like to thank Dr. Owens for directing my mind to this work and for picking Dr. Webb whose expertise in Mental Health Advanced Practice Nursing played a huge role in the success of this project. I cannot thank you both enough. To my clinical preceptor Dr. D. Philibert Jr. Thanks for teaching me everything I know about advanced practice care for women and children. Your passion for your patients and level of professionalism sets a pace that I strive to beat every day I show up for work.

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Abstract

Depression can affect productivity and earnings among women, slow down the pace of active participation in social and family life, and increase health costs as well as distract attention from optimal health targets. Depression is the highest source of disability in NYC, with billions of dollars annually in related productivity losses. Although healthcare spending on depression affected patients is largely on hospital admissions, an estimated 40% of affected persons in New York do not get the adequate attention and care needed, with women most often affected by depression. This is an indication that the bedrock of preventive medicine for mental health, which is screening and treatment, is missing in our outpatient in the Bronx area of New York.

In this evidence-based project, women visiting a gynecology clinic in the Bronx, New York, were screened for depression using the Patient Health Questionnaire-9. Education helped nurses and medical assistant to screen more patients at the outpatient clinic. Also, statistical results showed a significant improvement in screening and referral for depression among these women due to a two persons' check - provider and nurses/medical assistants.

Keywords: PHQ-9, Depression, Mental Health Screening tools, Women, Gynecology, office visit

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Introduction

Depression can affect productivity and earnings among women, slow down the pace of active participation in social and family life, and increase health costs as well as distract attention from optimal health targets (Kepler et al., 2018). Evidence of a high rate of depression and low access to care for depressed patients in the Bronx, New York area coincides with the fact that many women are at risk of depression during menstrual and peripartum periods (Alhusen & Alvarez, 2016). Women consult obstetricians and gynecologists due to their body functionality through their lifespan, often presenting conditions or complaints that may be related to stress or mood disorders. Visits for obstetrics/gynecology (OB/GYN) care present an opportunity for preventive screenings for mental health issues, such as depression. Currently, OB/GYN providers in an outpatient clinic in the Bronx, New York, are not required to screen women for depression, despite the dramatic increase in public concern over depression and mental illness in America, especially in New York (Kepler et al., 2018). Lack of screening, referrals, and care poses a great danger for depressed patients, whose conditions may worsen without appropriate and necessary care (Pop et al., 2019).

There are almost 1.5 million people living in the Bronx, which is one of five boroughs in New York City (World Population Review, 2021). Women represent 53% of the Bronx population, which is about 800,000. The healthcare organization where this project was completed, currently has 12 OB/GYN clinics in the Bronx NY. Data shows that providers care for at least 20 women per day, five days a week at these 12 sites. Thus, more than 62,000 women are seen annually, and more than 8,000 possible cases of depression are unattended annually going by the current 13% rate of depression in the Bronx. Depression is twice as high in women

compared to men, especially during and after reproductive periods (New York City Department of Health and Mental Hygiene [NYCDHMH], 2021).

After several initiatives to reduce mental illness among women in the United States, in particular New York, the results are disappointing. Many affected women feel stigmatized; discrimination and barriers reduce the ability to recognize and address the related depression problems (Xue et al., 2020). Depression, one of the common mental disorders, appears to be under recognized or untreated too often by healthcare providers operating, funded, or regulated by the New York Office of Mental Health. Women affected by depression may seek treatment from private providers or rely on self-help and peer support or receive medication treatment from primary care providers (Kepler et al., 2018). This may be a result of lack of attention and appropriate screening during office visits (Levis et al., 2019).

This problem requires urgent attention, such as improving recognition and appropriate screening for depression among women during office visits. Some primary care and OB/GYN providers in states and counties across the United States and New York recognize the need for proper recognition and screening of depression among women during office visits; however, screening efforts have not materialized as planned (NYCDHMH 2021).

Consequently, this evidence-based practice project was to prove that screening women during office visits using the PHQ-9 mental health screening tool could lead to improvements in the recognition of depression and subsequent referral. This project provided insights into the use of the PHQ-9 screening tool to make proper referrals for mental health services and to improve recognition and treatment of depressive disorder among women in the Bronx, New York.

This evidence-based Doctor of Nursing Practice (DNP) project aimed to answer the clinical question: Does implementation of the Patient Health Questionnaire 9-Item (PHQ-9) screening during OB/GYN outpatient visits, improve the identification of depression and referral among women in a private clinic in the Bronx, New York. The dependent variable was the recognition of depression and subsequent referrals among women, and the independent variable was implementation of the PHQ-9 mental health screening questionnaire.

Background & Significance

Depression is a leading cause of disability and a significant global health burden (Wainberg et al., 2017). Depression is the most treatable mental health illness that affects more women than men; research results revealed the prevalence of depression is twofold higher for women, compared to men (Salk et al., 2017). In 2020, the World Health Organization estimated that over 264 million people suffer from depression globally, representing about 5% of adults worldwide. Depression affects approximately 10% of women and 5% of men (WHO, 2021).

According to Kepler (2018), New York City adults with depression are more likely female (68%), Latino (42%), unemployed and not seeking work (49%), with less than a high school education (35%), and living in the most impoverished neighborhoods (30%). This is consistent with the Bronx, New York area population. Women are especially vulnerable to depression during perinatal periods and are subject to extreme fluctuations in mood throughout various cycles of life (Alhuzen & Alvarez, 2016). A concerning finding from related research found that, although screening and referrals may occur, nearly 60% of women with positive screening results did not follow through on referrals to psychological or psychiatric services (Xue et al., 2020).

On average, less than half of people with depression use mental health services and more than one in five New Yorkers are showing signs of mental illness, with low rates of diagnosis and treatment (Kepler et al., 2018). In the Bronx, New York, where this project was completed, less than one-third of persons living with depression are receiving treatment and there is a need to improve screening and referrals (NYCDHMH, 2021). The intervention in this project was the use of the PHQ-9 for depression screening for women seeking OB/GYN care at a Bronx, New York primary care clinic. The study of Bronx, New York women accessing OB/GYN services, could reveal the rate at which women screen positive for depression and follow through on referrals. Additional questions asked of participants about the screening and referrals could lead to information that could be useful to improve the rate at which screening, and referrals are beneficial for Bronx, New York women seeking care from OB/GYN providers.

Literature Review

The literature search was conducted through Bellarmine University's W. L. Lyons Brown's Library using the database Cumulative Index to Nursing and Allied Health Literature (CINAHL), EBSCOHost, and PubMed. The subject heading in combination with Boolean phase and/or, pertaining to the project topic was used with keywords PHQ-9, Mental Health Screening tools, Depression, Women, Gynecology, and outpatient office visit. 67 articles were initially identified. Results were filtered by date (2018-2022) and 37 articles remained. Following the review of abstracts, with application of inclusion and exclusion criteria, only 26 articles were kept from all searches to guide this project.

The literature review was able to confirm the existing problem, address the clinical question, and isolate six significant themes. First, morbidity rates of depression are higher among women than men, even though mortality is greater among men from suicide. (Arнау Soler et al.,

2019; The American Psychological Association [APA], 2013; CDC, 2020; NYCDHMH, 2021; Salk et al., 2017; WHO, 2021). Second, depression is a product of complex interactions of social, psychological, and biological factors. (Kepler et al., 2018; Xue et al., 2020). Third, depression is treatable and curable. (APA, 2013; Kraus et al., 2019; Salk et al., 2017). Fourth, screening for depression improves health outcomes and productivity among women (Kepler et al., 2018; Kraus et al., 2019; Lancet Global Health, 2020; Li et al., 2019; Park & Zarate, 2019). Fifth, women's health and primary care providers have a role to play in identifying depression among women. (Accortt & Wong, 2017; Bhat et al., 2017; Li et al., 2019; Mgonja & Schoening, 2017; O'Connor et al., 2016; Raglan et al., 2019; Russomagno & Waldrop 2019; Siniscalchi et al., 2020). Lastly, the PHQ-9 depression screening tool is a reliable tool for screening women at every encounter with a healthcare provider. (Indu et al., 2018; Kohrt et al., 2016; Levis et al., 2019; Muñoz-Navarro et al., 2017; Sun et al., 2020).

The American Psychological Association defined depression as a serious but treatable mental illness that affects how a patient feels, thinks, and acts (APA 2013). Depression is classified as a prevalent mental disorder, more severe than the usual fluctuations in mood and momentary emotional responses to the challenges of everyday life (WHO, 2021). Depression stems from a complex interaction of social, psychological, and biological factors (Xue et al., 2020). Adverse life events, such as unemployment, bereavement, and traumatic experiences can be stressors that exacerbate or trigger depressive episodes, leading to more dysfunction that worsens life conditions (Kepler et al., 2018).

Depression affects about one in 15 adults annually and in extreme cases, may become a serious health condition that could bring about poor functionality at work and in other social gatherings of the affected person. Signs and symptoms of depression include feeling sad,

irritable, empty, or weak, losing interest and pleasure in activities; there may be changes in appetite, trouble sleeping, weight gain or weight loss, increased fatigue, feelings of guilt, and sometimes regular thoughts about death or suicide (APA, 2013). Depression has different categories, including mild, moderate, and severe, depending on the degree of severity and impact on individual functioning (Park & Zarate, 2019). Data from the Centers for Disease Control and Prevention (2021) indicate that 18.5% of Americans experienced mild, moderate, and severe depression episodes; of those, 60% were women and 40% were men. However, Ko et al., (2012) noted that more than 50% of American women living with Major Depressive Disorder are not diagnosed.

In 2016, average depression rates were 9% - 10% for women and 8% for men. Prevalence rates were highest among Latinos at 13% followed by Blacks at 8%. Low-income residents' rate of hospitalization for mental illness is twice the rate of hospitalization for residents from high income neighborhoods (NYCDHMH, 2021). Average income in the Bronx Borough is less than \$32,000 compared to State average income of over \$68,000 (World Population Review, 2021). The Bronx population is 54% Latino and Hispanics, and 35% blacks (World Population Review, 2021). The Bronx borough recorded the highest depression rate at 13%, compared to New York City's average of 9%, and more than 20% higher than Brooklyn and Manhattan.

According to the World Health Organization, (2021) only 40% of persons with depression use mental health services globally. Reports show that New York state ranked sixth on mental illness prevalence rates among 50 states in America and the District of Columbia. For access to care, New York also scores low, ranking 16th nationally (Mental Health in America, 2021). The Center for Disease Control and Prevention (2021) affirmed that psychological and pharmacological treatments are effective for moderate and severe depression. According to the

Healthy People 2030 objectives, (2021) the current rate of Americans over 18 years old receiving treatment for depression is only 64%, leaving 36.2 % untreated. The target rate by 2030 is to increase that number treated to 69.5%. However, the average rate of people receiving treatment for depression in New York City is only 38% leaving 62% untreated (NYC Vital Signs 2018).

Lost productivity due to anxiety and depression costs the global economy a trillion dollars annually; poor mental health was projected to cost the global economy \$6 trillion by 2030 (Lancet Global Health, 2020). These costs are from reduced earnings due to mental health problems and the cost of untreated or poorly treated mental illness in the disability system, in prisons, and in the streets, which contribute to the mental health crisis. Consequently, inaccessibility to adequate health care can aggravate the disorder, costs, and health challenges (NYCDHMH, 2021).

This menace of aggravating depression, particularly among women, can be partly attributed to low proportions of screening in community-based health centers to detect and recognize the problem of depression that contributes to mental health crisis. Screening for depression typically includes the use of a depression screening questionnaire leading to the identification of patients who may have depression (Levis et al., 2019). Early detection, recognition, and treatment through screening for depression can increase quality of life, prevent complications from recurring behavioral health disorders, and help reduce health care costs (Park & Zarate, 2019).

Several steps have been taken by international organizations and federal and state governments to address depression, including the WHO's Mental Health Action Plan 2013-2030 to provide appropriate interventions for people with mental disorders. Several care services delivered by lay workers to individuals and groups includes the Problem Management Plus

Manual, the Group Interpersonal Therapy for Depression for group treatment of depression, and the Thinking Healthy manual which covers the use of cognitive-behavioral therapy for perinatal depression. These programs are yet to yield the desired objectives of reducing depression and depressive disorder among adults. Major barriers include poor recognition and diagnosis of depression, and lack of screening and uptake of referrals to psychiatric and psychological care (Xue et al., 2020).

Alhusen and Alvarez (2016) indicate that the high rate of depression, high cost of care, and lower quality of life for depressed patients can be attributed to low access to basic, quality clinically appropriate treatment and care. Caring for patients at outpatient clinics with adequate resources and follow up is cheaper than leaving patients without the care and follow up they need, resulting in a high rate of hospitalization (NYCDHMH, 2021). This onus, therefore, falls on providers who are not providing screening, referrals, follow-up, or other resources to patients during outpatient office visits.

Depression among Women

OB/GYN care has been proposed as having stronger roles in diagnosing, preventing, and treating depression, to reduce the rising cases of depression-related distress among women (Bhat et al., 2017; Mgonja & Schoening, 2017; Russomagno & Waldrop, 2019). Behavioral health-related disorders, such as depression, are highly curable, and early detection and treatment are critical for improving outcomes (Kraus et al., 2019 and Sun et al., 2020). Wang et al., (2021) and Bhat et al., (2017) demonstrated that depression screening and treatment methods developed in primary care settings could be adapted to a variety of obstetrics and gynecology practices.

OB/GYN providers are in an exceptional position to detect and treat depression early, before the symptoms become chronic and cause havoc in families and societies (Bhat et al., 2017; Raglan et al., 2019). Women are likely to seek care for issues related to OB/GYN needs, especially during sensitive times like pregnancy, and for treatment of diseases or concerns other than depression or anxiety. Recommendations advocated by the United States Preventive Services Task Force (USPSTF) include that all individuals be screened for depression, with pregnant and postpartum women receiving special attention (O'Connor et al., 2016 and Siu, 2016). In 2018, the American College of Obstetricians and Gynecologists (ACOG) also pressed for screening for the symptoms of depression and anxiety at least once throughout pregnancy ("ACOG Committee Opinion No. 757: Screening for Perinatal Depression", 2018). Empirical evidence substantiates the need for depression screening peripartum and throughout the year following a new birth (Accortt & Wong, 2017; Alhusen & Alvarez, 2016; Byatt et al., 2018; Johnson et al., 2021; Venkatesh et al., 2016).

Early detection and treatment can assist in reducing morbidity related to the underlying disorder and comorbidity conditions; therefore, prevention and early detection go hand in hand. Cervical and breast cancer, hypertension, and sexually transmitted diseases, among other disorders routinely treated in obstetrics and gynecology settings, currently have few effective screening and preventive measures. As a result, screening women for depression during office visits will assist women in receiving the care they require while also lowering the likelihood of hospitalization and other associated problems (Byatt et al., 2012; Ingle et al., 2017; Jha et al., 2019; Li et al., 2019; Natale et al., 2019).

Screening for Depressive Symptoms

Several screening tools for depressive symptoms have been identified, developed, evaluated, and their psychometric properties tested in the literature to serve as the basis for diagnosing *likely* or *probable* behavioral health concerns and triaging people for mental health treatment (Ali et al., 2016). Screening tools such as the Structured Clinical Interview for Diagnostic and Statistical Manual-IV Axis I (Shabani et al., 2021), the Baidu Index (BDI) and the Sina Micro Blog Index (SMI) (Yu et al., 2021), then Mini International Neuropsychiatric Interview 5.0 (Pettersson et al., 2018), the DSM-IV (Knaster et al., 2016), and the Hospital Anxiety and Depression Scale (HADS) (Siyoum, et al., 2021) among others, have been employed to examine the prevalence and recognition of depression among inpatients. However, the PHQ-9 is the most widely used screening instrument, having been validated in a range of settings, including in countries across the world, translated into different languages (Ali et al., 2016; Velloza et al., 2020). This tool is simple to use, evaluates depression reliably, and corresponds to the nine criteria for Major Depressive Disorder diagnosis in the Diagnostic and Statistical Manual of Mental Health Disorders (Ali et al., 2016; Monahan et al., 2009).

Another commonly used tool for screening for the prevalence of depressive disorder is the Edinburgh Postnatal Depression Scale (EPDS). With excellent sensitivity and specificity for diagnosing severe depressive illness, the EPDS has been widely utilized among pregnant and postpartum women. Because the scale does not include visceral depressed symptoms that could be connected to either depression or pregnancy (e.g., changes in appetite or sleeping), the EPDS could have an advantage over the PHQ-9 for identifying prenatal depression (O'Connor et al., 2016). The PHQ-9 is less widely utilized in pregnant and postpartum women (O'Connor et al., 2016), yet several studies have found that the PHQ-9 and the EPDS have similar sensitivity and

specificity estimates, suggesting that women can distinguish pregnancy symptoms from somatic depressive symptoms (Levine et al., 2008; O'Connor et al., 2016; Santos et al., 2017; Zhong et al., 2010). Furthermore, because the PHQ-9 is widely used in the general community, using it to screen for depression can help compare pregnant women and women who recently give birth to other groups of women.

In conclusion, women seeking medical treatment should be screened for depression since it is a treatable and curable disorder than can have a negative impact on the lives of women, their families, and the community. The PHQ-9 has been widely endorsed for extensive use in care, reproductive health clinics, and HIV clinics as a first step in depressive sign screening (Ali et al., 2016). A large body of evidence supports the use of the PHQ-9 as an effective depression identification tool in the general population and among women seeking OB/GYN care.

Theoretical Framework

This study revolved around the Diathesis Stress model of depression. This model encompasses the combination of preexisting diathesis (such as a negative cognitive style) and stressors, predictive of the development of depression. When faced with considerable life stress, the model shows that those who have a negative attitude about themselves, or the environment are more likely to develop depressive symptoms. The premise that people's cognition and the way they think about the world differs, making them subject to depression, helps to explain why people react differently to comparable stressful events (Slavik & Croake, 2006).

According to this theoretical concept, an individual's tendency (diathesis) for developing a condition is a product of the dynamic interplay between the diathesis and continuing stresses. Personal characteristics like resilience can act as a deterrent to the onset of psychopathology.

According to this notion, everyone has some levels of diathesis to sickness, with a threshold at which symptoms will arise. Exceeding this threshold is dependent on the interplay between diathesis and the degree of adversity, which elevates the risk of depression beyond the additive effects of diathesis and stress alone (Arnau-Soler, 2019).

Women are especially vulnerable to many of these stress models, especially during specific periods of the life cycle. The prevalence of behavioral health issues among women cared for by primary care providers is widespread. The most common behavioral health-related concern affecting our world today appears to be depression, and women are shown to be at a higher risk for it than men, with the risk most prominent throughout vulnerable reproductive phases such as adolescence, pregnancy, peripartum, and menopause experiences (Bhat et. al., 2017). Thus, early detection and treatment of behavioral disorders, such as depression, in primary care situations encompassing OB/GYN care can potentially increase quality of life, lessen difficulties from co-occurring health and medical vulnerabilities, and reduce health-care costs (Mulvaney-Day et al., 2017).

Evidence-Based Practice Model

The Johns Hopkins Evidence-Based Practice for Nurses and Healthcare Professionals Model was used as a guide to this project (Figure 1) (Dang et al., 2022). This model is divided into 3 phases. These 3 phases include identifying a practice problem, identifying an evidence-based intervention that is adaptable to the institution to solve the problem, and using an interprofessional team-based approach to solve the problem. Each phase requires a few steps and input. Ultimately, a feedback mechanism is used for continuous improvement of the intervention that is being implemented to correct the problem.

Stakeholders

There were a number of stakeholders identified for this project. First, were the individuals/communities that would be directly impacted by the intervention, including the women seeking care, their families, and the Bronx New York Community as a whole. Additionally, healthcare providers, medical assistants, nurses, technical/EMR support team members, front desk officers and schedulers, the project supervisor, clinical preceptors, and the site supervisor/unit managers were also impacted by implementation of the project and the outcomes.

Project Design

Purpose

The purpose of this evidence-based practice project was to evaluate the implementation of PHQ-9 screenings in an outpatient OB/GYN clinic; to improve the recognition of depressive symptoms among women seeking OB/GYN care; and to increase appropriate mental health referrals. The specific objectives of this project included:

- i. Provide training to healthcare workers to accurately screen for depressive symptoms using the PHQ-9 tool.
- ii. Implement a reliable and structured process for screening of depressive symptoms using the PHQ-9 and implementing a mental health referral process for patients scoring ≥ 10 on the PHQ-9.
- iii. Improve recognition of depressive symptoms among women in a private outpatient OB/GYN clinic.

- iv. Improve referrals for patients with depressive symptoms.

Sample & Setting

The project was carried out at one of the outpatient OB/GYN clinics located in Bronx, New York. The healthcare organization currently has 12 OB/GYN clinics in the Bronx NY. Every year, this practice currently cares for more than 62,000 women living in the Bronx, through the 12 clinic sites. Each site is equipped with at least 2 medical assistants, 1 medical provider, and 1 site supervisor. EMR and the department of outgoing referral teams are centralized and are available to assistance via Microsoft teams. Meeting with the care management team was done as needed for updates on improving screening and training of staff on use of the PHQ-9 screening tool.

The population of women visiting the clinic consisted of mostly black Americans and Hispanics. They were culturally and ethnically diverse group of females seeking care for women's issues. Data was collected on patients seeking care between January through February of 2022 and was compared to patients that were cared for between January through February of 2021.

Strength, Weaknesses, Opportunities & Threats (SWOT) Analysis (Appendix 2)

The organization prides itself in its strong presence in the Bronx community, with availability of almost all specialties under one corporation for easy referral and continuity of care for patients. Tested, trusted, and robust electronic medical records (EMR) make data collection, chart review, documentation, and referral process seamless. The organization is responsible for a significant percentage of the Bronx community residents healthcare, thus a policy change in this organization would make an impact on the health of the residents.

Major internal weakness for the organization (which the project sought to improve) was a lack of policy on mental health screening for patients seeking outpatient care at all clinics. Medical personnel were not trained or required to screen patients. The PHQ-2 was a recommended mental health screening tool, but not required. Medical assistants and nurses were not willing to screen patients. They saw it as more work to their already heavy workload.

PHQ-9 Reliability & Validity

PHQ-9 is one of the most common, easy-to-administer, and widely used depression screening tools in primary care settings and is endorsed by the National Quality Forum for behavioral health screening. The tool is appropriate for use during clinical interviews, having demonstrated good to excellent sensitivity and specificity across most relevant depressive disorders. The first 2 questions on the PHQ-9 questionnaire make up the PHQ-2 questionnaire.

The PHQ-9 screening tool is a validated tool, based on numerous studies of sensitivity, specificity, and threshold criteria (Indu et al., 2018; Kohrt et al., 2016; Muñoz-Navarro et al., 2017; Sun et al., 2020). Muñoz-Navarro et al., (2017) found the PHQ-9 to be a highly satisfactory tool that could be used for screening major depressive disorders in the primary care setting. According to Kohrt et al., (2016), the PHQ-9 correctly identified 88% of patients with depression. In psychiatric hospitals, the PHQ-9 proved to be a reliable and valid screening tool that is rapid, simple, and effective for patients with major depressive disorder, (Sun et al., 2020). The PHQ-9 has a consistent Cronbach's alpha reliability of 0.9 at a cut off score of greater than 9, a sensitivity result of 82.5%, and good validity when administered by health workers to identify depression in the primary care setting (Indu et al., 2018). A systematic review by Chi Fai Billy & Weng Yee, (2018) revealed that the PHQ-9, when used among the Chinese population, proved to be a sensitive screening tool that is highly predictive of depression in primary care

settings (Chi Fai Billy & Weng Yee, 2018). It has been endorsed and validated by different researchers with samples such as the general population and adults, including different age groups (Kroenke et al., 2010; Ganguly et al., 2013; Al-Ghafri et al., 2014), as well as being validated in different languages, such as English, Chinese, Thai, and Arabic (Tsai et al., 2014; Suwaya et al., 2016).

Evidence-Based Intervention

The PHQ-9, instead of the PHQ-2, was administered by trained nurses and medical assistants under the supervision of an OB/GYN provider. This allowed for proper recognition and identification of depressive symptoms, leading to decisions about referrals to mental health services. The training of nurses and medical assistants occurred 2 weeks prior to implementation of the project.

During office visits, the PHQ-9 was used to screen women for depressive symptoms by trained nurses during the patient intake. Those with scores ≥ 10 were flagged for the provider. Providers were able to discuss the screening results with the patient and provide a referral for mental health services.

The PHQ-9 appears similarly sensitive for younger and older patients, with a cut-off score of 10 or above acceptable for diagnoses and referrals (Levis et al., 2019). Any patient scoring >20 on the PHQ-9 was flagged for immediate mental health services via telehealth. The healthcare organization runs a comprehensive health care center specialty practice with mental health, urology, and neurology services, among others. Referral to these specialties can be done by providers seamlessly via the electronic medical record system, Electronics Clinical Works (ECW). Providers can communicate with other providers to collaborate on the care for patients

via Teams. The mental health services department currently recommends providers to conduct the PHQ-9 screening on their patients (Appendix 1).

Training on use of Intervention (PHQ-9 Questionnaire)

To ensure effective and accurate use of the PHQ-9, providers, nurses and medical assistants were trained using the mental health training network's Patient Health Questionnaire for Depression Screening free online course via <https://mentalhealthtrainingnetwork.org>. This course takes about 2 hours to complete. A score of 80% is required to pass. The course teaches how to administer, score, and interpret the PHQ-2 and PHQ-9 with all age groups. After the training, nurses and medical assistants were able to interpret a positive PHQ-2 and PHQ-9 score, help patients to fill out their questionnaires, and document scores in the EMR. Staff were resistant to training. Therefore, they were incentivized with lunch and gift cards to participate in this training and ensure that patients were screened for the purpose of this project.

Data Collection

Screening data and demographics were collected from the patient by the medical assistant or nurse upon intake. Referrals were entered by providers into the EMR. Follow-up treatment was captured in the EMR, if completed. The project leader collected data weekly for aggregation. This data included 1) PHQ-9 screening (yes/no), 2) PHQ-9 and PHQ-2 Score, 3) mental health services referral, if appropriate (yes/no) 4) Receiving treatment (yes/no) 5) Age and 6) Language. The project leader entered de-identified data into excel spreadsheets. The data was then exported to Statistical Service and Product Solution (SPSS) software for statistical analysis.

Data Analysis

PHQ-9 Training. To evaluate healthcare worker training to accurately screen for depressive symptoms using the PHQ-9 tool, the project manager tracked the number of employees who completed training. The goal was for XX% of eligible employees to complete training prior to project implementation. The plan for new employees was to provide training upon hire, during onboarding orientation.

Reliable and Structured Process for PHQ-9 Screening and Mental Health Referrals. The evaluation of the PHQ-9 screening processes included a weekly review of screenings compared to patient visit lists. The program manager identified the percentage of patients who were screened. Further review identified completion rates by healthcare worker. Follow-up training was provided when needed throughout the project to reinforce screening processes and structures. Referrals for patients scoring ≥ 10 on the PHQ-9 were also monitored weekly. Training was reinforced with providers when patients did not receive appropriate referral.

Improved Recognition of Depressive Symptoms. Data analysis compared the number of patients that were screened for depression between January through February of 2022, to patients that were screened for depression between January through February of 2021. This data was used to evaluate the recognition of depressive symptoms before and after implementation of the project.

Improve Referrals for patients with Depressive Symptoms. Data analysis compared the number of patients that received a psychiatric referral between January through February of 2022, to patients that received a psychiatric referral between January through February of 2021. This data was used to evaluate referral for depressive symptoms before and after implementation of the project.

Human Subjects Protection

Approval for this project was obtained through the IRB prior to data collection. Patient data was de-identified. All data was reported in aggregate form to evaluate healthcare worker and provider performance. This project was an organizational initiative to improve patient outcomes through improved care coordination, thus organization approval was also obtained prior to implementation.

Results

Descriptive Statistics

Data were collected from 754 patients (n=754); 339 pre-intervention patients and 415 post-intervention patients. Overall, the number of patients seen during the two data collection periods were similar, with a slight increase during the post-intervention period. An increase in the number of patients could be explained by the decline in covid-19 rates during the post-intervention period (January – February 2022) compared to the pre-intervention period (January – February 2021).

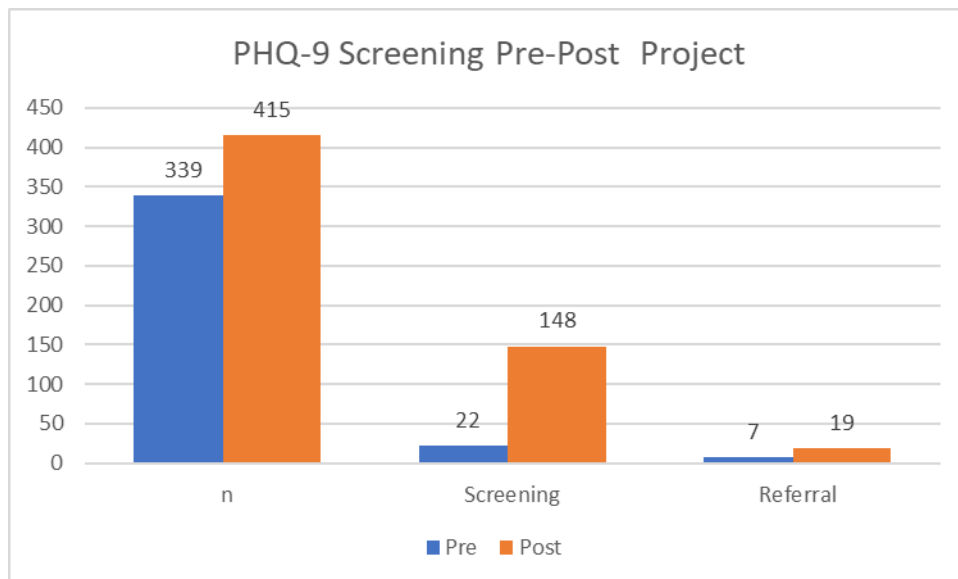
Descriptive statistics were calculated for demographic variables, including language spoken and age. Regarding language spoken, 66.1% of the pre-intervention sample were English speaking, 33.0% spoke Spanish, and 0.9% spoke another language. The post-intervention sample was not significantly different from the pre-intervention period with 61.2% speaking English, 38.1% speaking Spanish, and 0.7% speaking another language. In terms of age, the mean age of the pre-intervention sample was 41.4 years (SD=14.532), and the mean age of the post-intervention sample was 41.16 years (SD=15.084). Age distribution for pre and post project was similar.

Table 1. Spoken Language Among Groups

Group (n)	English (%)	Spanish (%)	Other (%)
Pre-Intervention (339)	224 (66.1)	112 (33.0)	3 (0.9)
Post-Intervention (415)	254 (61.2)	158 (38.1)	3 (0.7)

Descriptive statistics for patient screenings were also calculated. Completed screenings increased from 22 (6.5%) pre-intervention to 148 (35.7%) post-intervention (Figure 1). A total of 30 patients scored ≥ 10 on the PHQ-9. Referrals for patients with PHQ-9 scores ≥ 10 increased from 7 pre-intervention to 19 post-intervention. Eight patients who scored ≥ 10 on the PHQ-9 were already receiving mental health treatment and were not referred for additional mental health services. Three of the patients with PHQ-9 scores ≥ 10 declined a mental health referral, even though they were not receiving treatment. They cited fear of admission to inpatient psychiatric units and stigmatization as their reasons. Further, the rate of women suffering from possible depression with no treatment during the post-intervention period was 15% while 5% were already receiving treatment.

Figure 1: PHQ-9 Screenings and Referrals Pre-Post Intervention



Screening for Depressive Symptoms

The PHQ-9 screening was used as a diagnostic tool for mental health services referral. The independent variable was the grouping (pre-intervention, post-intervention). The outcome variable, PHQ-9 screening, was a binary measurement (yes, no). Because the independent and outcome variables were categorical, the appropriate statistical test to determine a correlation between the two variables was the chi-square test of association. The Phi coefficient was interpreted for a significant Chi Square to determine the magnitude of the correlation.

Table 2 shows the frequency table used to calculate the chi-square statistics. The percentage of post-project patients screened with the PHQ-2 and PHQ-9 was 35.7%, while the percentage of pre-project patients screened with the PHQ-2 was 7.4%. The chi-square test of association between PHQ-2 Screen and pre-post status ($\chi^2_{df} = 84.45, p < 0.001$) was statistically significant. The chi-square test confirms that there is a statistical difference between pre- and post-project PHQ-2 screenings. Screenings increased significantly following the project's intervention.

Table 2. PHQ-2 Screen by Group

Group	PHQ-9 Screening		Total
	No (%)	Yes (%)	
Pre	314 (92.6)	25 (7.4)	339
Post	267 (64.3)	148 (35.7)	415
Total	581	173	754

Referrals to Mental Health Providers

To determine if the PHQ-9 screenings increased mental health referrals of women seeking OB/GYN care, a pre- and post-intervention chart review was performed. The mental health referral outcome variable measured in this project was also binary (no, yes). Therefore, the appropriate statistical test to evaluate a correlation between mental health referrals and project intervention (pre-intervention, post-intervention) was the Chi-Square test of association. Table 3 shows the frequency table used to calculate the chi-square statistics for mental health referrals. For the post-intervention group, the patients who scored ≥ 10 on the PHQ-9 questionnaire were referred to mental health service providers. During the pre-intervention period, only patients that scored at least 1 on the PHQ-2, and requested a referral, were provided a mental health referral.

Table 3. Mental Health Referral by Group

Group	Mental Health Referral		Total
	No (%)	Yes (%)	
Pre	332 (97.9)	7 (2.1)	339
Post	393 (94.7)	19 (5.3)	415
Total	725	29	754

As Table 3 shows, the proportion of post-intervention patients referred to mental health services was 5.3%, while the percentage of pre-intervention patients referred to mental health services was 2.1%. The chi-square test of association between referral and pre-post intervention ($\chi^2_{df} = 5.28, p < 0.022$) was statistically significant. Therefore, the chi-square test confirms that there is a statistically significant correlation between the intervention and mental health referrals.

Patient & Provider Satisfaction

To evaluate patient satisfaction with the PHQ-9 screening and mental health referral, follow-up patient phone calls were conducted by the project manager. The majority of patients expressed satisfaction with the PHQ-9 screening and mental health referral process. Patients cited the ease of scheduling telehealth appointments and access to mental health resources that they never knew existed, as reasons for satisfaction. Review of mental health providers' notes on the EMR revealed diagnosis varying from depression, anxiety, and acute mood disorders. Overall, providers reported satisfaction with the PHQ-9 screening and mental health referral process.

Summary

To summarize the findings from this project, a statistical analysis of the post-intervention data found that out of 148 patients that were screened, 30 scored ≥ 10 on the PHQ-9 questionnaire, 19 were referred for mental health services, 8 were receiving treatment and did not require referral, and 3 declined referrals. Patients who declined referral cited fear of admission to inpatient psychiatric units and stigmatization as reasons for refusing referral. Approximately 15% of women in the post-intervention group were not receiving mental health services but screened positive for depressive symptoms, while approximately 5% screened positive for depressive symptoms and were already receiving treatment.

Discussion and Implications for Change in Nursing Practice

The US Preventive Services Task Force, CDC and ACOG has long recommended depression screening as a significant vital sign that should be done for every woman that shows up for medical care (ACOG 2018; CDC 2020; USPSTF 2016). Depression among women in the Bronx at 13% pre-covid data is very depressing. Considering the reported 3-fold increase in

depression rate among adults due to the pandemic (Ettman et al., 2020). It is depressing to note that nurses at this healthcare organization are not trained to, and do not screen patients for depression. Before this study, even though depression screening is a nursing role, only providers seldomly screen patients presenting with depressive symptoms for depression.

To ensure effective and accurate use of the PHQ-9, providers, nurses, and medical assistants were trained using the mental health training network's Patient Health Questionnaire for Depression Screening free online course via <https://mentalhealthtrainingnetwork.org>. This course takes about 2 hours to complete. An 80% passing score is required to pass. The course teaches how to administer, score, and interpret the PHQ-2 and PHQ-9 with all age groups. After the training provider, nurses and medical assistants were able to interpret a positive PHQ-2 and PHQ-9 scores, help patients to fill out their questionnaires and document scores in EMR. Staff were resistant to training. Therefore, they were incentivized with lunch and gift cards to participate in this training and ensure that patients were screened for the purpose of this project.

This project leader incentivized nurses to screen patients for the purpose of this project, while the provider also reviewed patients' PHQ-9 scores for the purpose of this project. This led to a significant increase in the number of patients screened for depression. However, only 35% of patients seen at the clinic were screened. There is still more ground to cover. A 20% post study depression rate is worrisome considering the huge number of women are still unscreened. Meanwhile, this project was carried out at only one site out of the 12 sites opened to care for women in the Bronx NY. Screening 35% of over 400 patients (148) out of approximately 6000 patients seen every month at these 12 sites, leaves over 1200 possible cases of depression unrecognized and therefore, untreated.

Similarly, there is no policy mandating screening for depression in New York City and state. Even though there are a lot of resources available to help women with depression by the State of New York, lack of education, screening, diagnosis, referral and treatment has made these efforts insignificant.

This project was able to achieve most of its purposes. These included training nurses at the project site on use of PHQ-9, ability to work with nurses to increase the number of patients that were screened for depression and referred to the mental health services for further evaluation. Referral process was found to be seamless, even though there was no synergy between the women's health services and the mental health services within the healthcare organization.

This study surprisingly revealed that every patient that scored 10 and greater scored at least 1 on the PHQ-2 questions and that depression screening will not increase the time spent with patients or decrease the number of patients seen by a provider. Also, this study revealed the fear of stigmatization and lack of education among women on the available resources for treatment of depression in New York state. Consequently, this study calls for an urgent need for a mental health screening policy for all patients visiting all primary care offices in New York state and the clinics within the healthcare organization where this project took place.

Recommendations

Recommendation includes depression screening pathway in APPENDIX 3. Nurses and medical assistants will ask all patients simple 2 question PHQ-2 while taking vital signs, a score of 1 will lead to the second step on the pathway which is treatment. A yes will lead to a stop on the pathway, while a "NO" will lead to use of PHQ-9 questionnaire. A score of less than ten will mean no referral needed. A score greater than or equal to 10 automatically leads to inclusion of

PHQ-9 screening ICD-10 code (Z13.89) and need for referral for mental health services in the patient's chart until it is addressed by the provider.

Barriers to Implementation & Sustainability

There is no mental health screening policy in place within the healthcare organization where this project took place. Medical assistants, nurses and providers are not required to screen patients. The EMR system is not set up to remind health care workers of this important screening exercise. This project evaluated the nurses and providers willingness and ability to properly screen for depressive symptoms and provide appropriate referrals. The project leader, also a provider, led the actualization of improved screening and referral for the purpose of this project and incentivized nurses and medical assistants to screen patients.

Addressing Problems

Based on the positive and impressive outcome of this study, the project leader is in the process of presenting this work to the Providers and at management meetings at the healthcare organization, with the hope of building partnership with the mental health services department to draft a policy that will mandate mental health screening for all patient seeking care at all clinic sites. Also, PHQ-9 and PHQ-2 evaluation training to be incorporated into the orientation process for all new hires and refresher course for all old staff. The EMR team will create a hard stop for nurses and medical assistants to include a PHQ-2 and PHQ-9 score with the patient's vital signs. Providers would have to review PHQ-9 scores before they can proceed with treatment plans for patients on the EMR.

Conclusions

This project concludes that about 20% of women in the Bronx New York might be suffering from undetected depression due to lack of screening. 35% increase in screening as a

result of two persons' check thus - provider and nurses/medical assistants. And consequently a 50 % increase in the number of referral and treatment of depression by a mental health worker. This project concluded that lack of policy mandating depression screening, even though it is highly recommended by all health advocate bodies, has made efforts to fight depression unsuccessful in the Bronx area of New York. Lack of awareness of the epidemiology of depression and its impact on health outcomes have impacted the motivation of health care workers to screen patients for the disease during the obstetrics and gynecology care visits.

Ultimately policy change, education, EMR update, training of health care providers at the outpatient clinics and synergy of care between other primary care providers and mental health department will improve depression screening and consequently treatment of depression in the Bronx area of New York.

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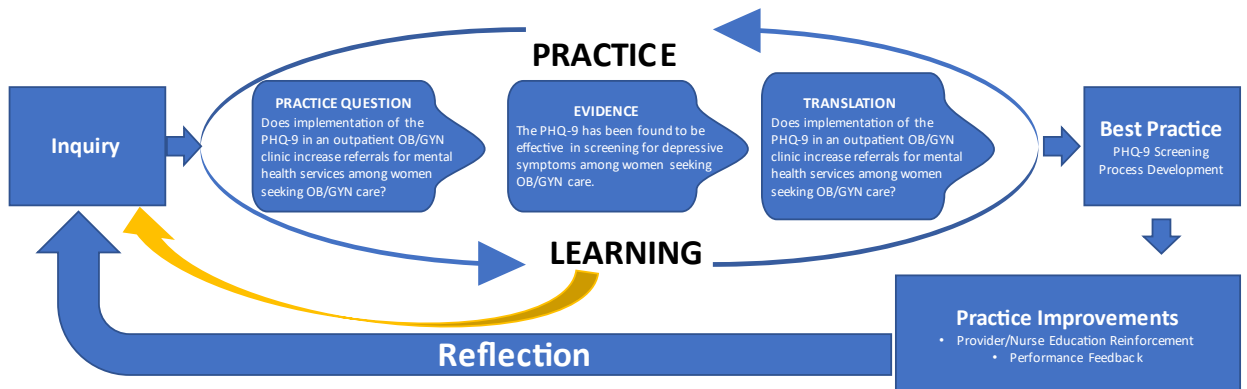
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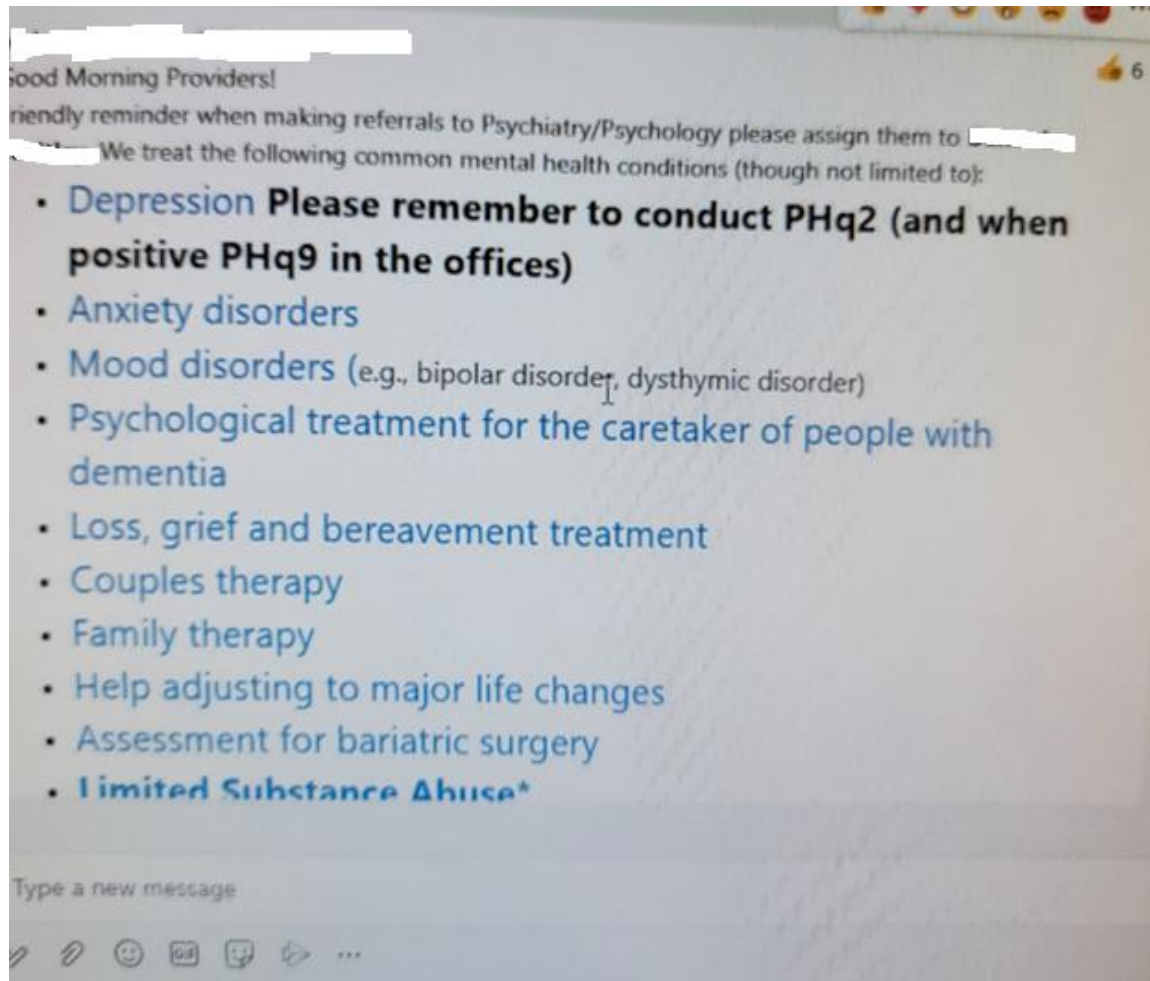
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Figure 1. Johns Hopkins Evidence-Based Practice for Nurses & Health Professions Model



Appendix 1

Psychologist email persuading providers to conduct the PHQ-9 screening on their patients



Appendix 2
SWOT Analysis

	Helpful	Harmful
Internal	<p>Strengths</p> <ul style="list-style-type: none"> • Strong presence in the community • Tested and reliable EMR • Patient friendly app for easy dissemination of information and for advertising new products • Loyal patient population • Access to research, staff, and infrastructure. • Existing expertise personnel in obstetrics care • Robust staff benefit and compensation 	<p>Weaknesses</p> <ul style="list-style-type: none"> • No policy on mental health screening • Staff not trained on use of PHQ-9 • Bureaucracy of getting approved by enterprise management • Push back from medical assistants and providers that thinks they would be given more work. • EMR not set up to ensure mental health screening
External	<p>Opportunities</p> <ul style="list-style-type: none"> • Our patients are excited to timely intervention and care they need. • Established referral system in EMR • Can easily tap into existing alliances in the community for marketing and advertising • Growing need for mental diseases among women due to the covid-19 pandemic • Largest outpatient network in Bronx area 	<p>Threats</p> <ul style="list-style-type: none"> • Patients are scared of stigma attached to mental health disease and may not want to be truthful about their disease • No existing policy mandating nurses, medical assistants, or providers to screen patients for depression • Medical assistants and nurses are not willing or get fatigued by number of patients with low PHQ-9 score

Appendix 3

Recommended Depression Screening Pathway for all health care workers

