Implementing Depression Screening at Annual and New Patient Visits in a Rural Primary Care Clinic: A Quality Improvement Project

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NURS 703B: DNP Project

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Abstract

Depression is the leading cause of disability worldwide, and depression complaints make up 10% of all primary care visits (Maurer et al., 2018; Yildrim et al., 2022; Wang et al., 2017). The United States Preventative Task Force (USPTF) recommends a depression screening be provided for every adolescent and adult (El-Den et al., 2017). The Patient Health Questionnaire 2 (PHQ-2) and The Patient Health Questionnaire 9 (PHQ-9) are the most utilized and validated screening tools and have demonstrated high sensitivity and specificity (Miller et al., 2021; Levis et al., 2020; Costantini et al., 2020). The goal of this project was to increase the number of adults (ages 18+) that were screened for depression during annual and new patient visits at a rural, primary care clinic. An educational PowerPoint was provided to all staff, outlining the new procedure for implementation of these depression screening tools. This consisted of the receptionists identifying wellness visits and attaching a printed PHQ-2 and PHQ-9 to the patient's chart. A medical assistant conducted the PHQ-2, and if positive, the provider conducted the PHQ-9. This new procedure was in place for five weeks and data review followed to determine if the new process identified more patients with depression, as compared to prior to the intervention. For those diagnosed with depression, further data collection occurred to determine if the patient was treated pharmacologically for depression, and/or if a mental health referral was initiated.

Introduction

Problem Description

Depression is the leading cause of disability worldwide (Wang et al., 2017). It is estimated that eight percent of the United States population currently suffers from depression (Maurer et al., 2018). In 2015, 16.1 million adults had suffered from at least one major depressive episode in the past year (Maurer et al., 2018). Depressive symptoms impact the wellbeing of individuals and increase the risk of suicide, which has increased by 33% in the last 20 years in the United States (Yildrim et al., 2022). The impact of depression in rural Oregon is slightly higher than the overall state average (Oregon Behavioral Health Initiative, 2021). Malheur county is a rural county in southeast Oregon that spans over 9,930 square miles with a population of 31,900. In 2021 Malheur County residents reported higher rates of depressed days compared to the Oregon state average. It was estimated that 15.1% of Malheur County residents over the age of 65 suffer from depression compared to the state average of 14% (Oregon Behavioral Health Initiative, 2021). Residents of Malheur County also face additional concerns regarding access to care. The patient to primary care physician ratio in Malheur County is substantially below the state average with 4,350:1 compared to Oregon's 1,080:1 ratio (Oregon Behavioral Health Initiative, 2021).

Early recognition of depression is vital to adequate treatment, yet screening rates are less than five percent in primary care in the United States (Maurer et al., 2018; Yildrim et al., 2022). Screening for depression is constructive and cost effective, as an earlier diagnosis and treatment leads to decreased productivity loss, which is the largest expense of depression (Yildrim et al., 2022). The Patient Health Questionnaire 2 (PHQ-2) and The Patient Health Questionnaire 9 (PHQ-9) are validated depression screening tools that are highly sensitive and specific.

Unfortunately, these screenings remain underutilized in primary care, despite depression making up 10% of primary care visits (Maurer et al., 2018; Yildrim et al., 2022).

Available Knowledge

Depression is a medical disorder recognized by the Diagnostic and Statistical Manual of Mental Disorders 5 (DSM-5). The criterion for diagnosis includes depressed mood or anhedonia for two weeks plus at least four of the following: appetite/weight changes, sleep disturbances, psychomotor agitation or retardation, fatigue/loss of energy, decreased ability to think or concentrate, feelings of worthlessness or excessive guilt, or suicidal ideation (Tolentino & Schmidt, 2018). Risk factors for depression include, but are not limited to, anxiety, substance use, adverse childhood events, trauma, low educational level, lack of social support, and isolation (Maurer et al., 2018).

There are several barriers to implementing depression screenings within primary care. It has been noted that primary care providers find the recognition and diagnosis of depression to be difficult (Miller et al., 2021). Other factors such as lack of administration time, number of questions providers must ask, and time taken to score the screenings have been identified as potential barriers (Miller et al., 2021). Different patient and provider priorities and apprehension for primary care providers to treat depression have also been noted (Waitzfelder et al., 2018).

To date, there have been many studies and analyses of various depression screening tools. The PHQ-2 and PHQ-9 have been evaluated extensively (Levis et al., 2020; El-Den et al., 2017; Miller et al., 2021). The PHQ-9 is a self-reporting questionnaire that assesses the number of depressive symptoms a patient has had in the last two weeks, thus meeting DSM-5 criteria (Levis et al., 2020). Scoring ranges from 0 to 27 points. Although a score of 10 is considered the most common cutoff, some studies have demonstrated that a score as low as 8 can suggest moderate

depression (Costantini et al., 2020; Levis et al., 2020). The PHQ-2 may be used as a prior screening before the PHQ-9. The PHQ-2 contains the first two questions of the PHQ-9 and can be scored 0 to 6 points, with the cutoff for further screening being 2 to 3 points (Costantini et al., 2020; Levis et al., 2020).

A systematic review and meta-analysis of 47 studies and 40 depression screening tools, found that the PHQ-9 had the highest diagnostic odds ratio, highest likelihood ration (LR+) and second highest specificity (Miller et al., 2021). El-Den et al., (2017) conducted a systematic review of 60 articles and 55 depression screenings and found the sensitivity of the PHQ-9 to range from 28-95% and specificity 61-98%. Additionally, when using only scores above 10 to identify depression, sensitivity was 59-80% and specificity 77-89%. Statistics improved to 83-92% sensitivity and 82-88% specificity when using the tool to semi-conduct an interview with patients (Levis, Benedetti & Thombs, 2019). Miller et al., (2021) found that the PHQ-2 had the lowest diagnostic odds ratio, but the highest specificity, with the sensitivity ranging from 42-95% and specificity 61-95% (El-Den et al., 2017). Levis et al., (2020) conducted a metanalysis of 44 studies to determine the effectiveness of using the PHQ-2 as a prerequisite to the PHQ-9. It was concluded that the PHQ-2 had the highest sensitivity (91%) with a cutoff score of 2 (67% specificity), but a higher specificity with the cut off being 3 (72% sensitivity). When used in combination, the PHQ-9 and PHQ-2 had 82% sensitivity and 86% specificity (Levis et al., 2020). Costantini et al., (2020) also found this combination to be effective.

There are several successful, evidence-based methods of implementing the PHQ-9 in primary care. Levis et al., (2020) concluded that completing the PHQ-9 in a semi structured interview format increased accuracy of results, compared to patients filling out the questionnaire independently. Costantini et al., (2020) found that studies incorporating staff training can

improve screening effectiveness and efficiency. Loeb et al., (2015) found that staff trainings regarding depression screenings increased documented PHQ-2 and PHQ-9 scores by 2.5-fold. Imbedding a tracking system within the EHR to inquire if a PHQ-9 was performed has been noted as successful but is dependent on the compliance of healthcare providers and follow-up documentation in subsequent visits (Loeb et al., 2015). Additionally, several previous quality improvement projects have successfully incorporated the PHQ-9 questions directly in the EHR (Bajracharya et al., 2016). It is suggested that a multi-faceted approach is useful in creating such protocols (Loeb et al., 2015).

Rationale

This quality improvement project utilized the Model for Improvement (MFI) developed by the Institute for Healthcare Improvement (IHI) to address the lack of depression screening in a primary care clinic. A systematic review found that the MFI is used frequently in healthcare and the majority of projects report improvement with this method (Knudsen et al., 2019).

Low depression screening rates in a rural primary care clinic was identified as a clinical problem requiring improvement. Through analysis of cause and effect (Appendix A), factors related to patients, clinic environment, materials, providers, and equipment all contributed to a lack of depression screening at the clinic in which this project was conducted. There was a lack of materials, such as printed screening aids or prompts embedded in the EHR within the clinic. Patients were possibly unwilling to disclose personal mental health issues or were unaware of depressive symptoms. Through interviewing providers at this rural clinic, it was determined that providers at times felt inadequate in diagnosing depression or forgot to screen. Implementing the PHQ-2 and PHQ-9 as standard screening tools at annual and new patient visits had the potential to improve screening rates.

Specific Aims

The goal of this project was to increase the number of adults (ages 18+) that were screened for depression during annual and new patient visits. This project aimed to increase the percentage of adults screened annually within the clinic from 0% to 60% within five weeks.

Methods

Context

The clinic in which this project was launched is located in Malheur County, Oregon. It is a privately-owned clinic that provides both primary and urgent care services. Within the clinic, there is one full time nurse practitioner (NP), one part-time NP, one medical doctor (MD), two medical assistants (MA), one receptionist, and one office manager. The clinic hours are Monday through Friday 8am to 5pm. Appointments are spread throughout the day to accommodate for walk-ins from urgent care, thus causing variation in scheduling. Annual and new patient appointments are scheduled for 30 minutes. Prior to this intervention, there was no process in place to screen for depression, and there was no EHR capability for screening prompts.

Interventions

The MFI's Plan-Do-Study-Act (PDSA) was utilized as the format for intervention. Baseline data was collected through a chart audit over two weeks to identify the number of patients who were screened for depression at annual wellness visits and new patient visits prior to the intervention. After baseline data was collected, a training was given to all staff members within the clinic and was offered twice to ensure every employee could be in attendance. The presentation consisted of a PowerPoint defining depression, current regional statistics, and a demonstration of how to properly conduct these screenings (Appendix B). Following the training, the new procedure to implement these depression screenings was introduced. This

consisted of the receptionists identifying wellness visits and attaching a two-sided paper to the chart that had the PHQ-2 on one side and the PHQ-9 on the second side. The MA who roomed the patient conducted a semi-structured interview from the PHQ-2. The MA notified the provider if the patient reported a score of 3 or above. This prompted the provider to have a semi-structured interview based upon the PHQ-9 and proceed with interventions if indicated. This new procedure was in place for two weeks. A second PDSA cycle was conducted due to the lack of screenings being performed. The second PDSA cycle consisted of the receptionist attaching a PHQ-2/PHQ-9 paper to every scheduled visit rather than solely new patient visits and annual visits. The MA's then performed a semi-structured interview based upon the PHQ-2 at every scheduled visit with the same intervention as the first PDSA cycle regarding a positive screening. The second PDSA cycle ran for three weeks.

Study of Interventions

The percentage of patients referred to a mental health resource and/or treated pharmacologically was determined through chart audits. A pre-test and post-test was given to all staff who participated in the depression screening educational PowerPoint to assess learning (Appendix C).

Measures

The primary outcome measures were the percent of patients screened for depression post-intervention at annual wellness and new patient visits from October 10, 2022, to November 11, 2022. This was compared to the number of patients screened for depression from September 26, 2022, to October 7, 2022. This was conducted through chart audits. Process measures included the percentage of PHQ-2 and PHQ-9 papers that are given to MAs and providers at wellness visits from front desk staff. The balancing measures included extra time spent with patients by

the MA and providers. A survey was given to MAs and providers post-intervention to assess their perspective of time spent with patients and if the new intervention created a time constraint.

Analysis

Pre-test and post-test results for employee depression screening education was transcribed into Microsoft Excel to calculate the mean pre-test and post-test scores for comparison. Each new patient appointment and wellness visit was documented with patient information de-identified in Microsoft Excel. Data from the chart audit included whether these patients were screened for depression. For those diagnosed with depression, further data was collected to determine if the patient was treated pharmacologically for depression, and/or if a mental health referral was initiated both pre-intervention and post-intervention for comparison.

Ethical Considerations

Both student and clinical staff involvement was voluntary. A letter of intent was sent to and signed by the site liaison endorsing permission to perform the intervention at the specified clinic. Other considerations included the confidentiality of patient health information and proper storage of information. A proposal was sent to the Oregon Health Sciences University Investigational Review Board prior to any intervention and was deemed to not be human research (Appendix D).

Results

The two-week chart audit prior to the intervention identified nine new patient and annual wellness visits. None of these visits exhibited a documented depression screening. There were no diagnoses of depression, mental health referrals, or pharmacological management of depression. There were five identified new patient and annual wellness visits during the first PDSA cycle. Two of the five visits had a documented depression screening (40%). The two screenings

performed did not show depression, and therefore there were not any referrals or pharmacological management needed. The second PDSA cycle identified eight new patient and annual wellness visits. Depression screenings were provided for six out of the eight visits (75%). After the second PDSA cycle, the percentage of new patient and annual wellness depression screenings increased 35% compared to the first PDSA cycle. The number of identified new patient and annual visits throughout the entirety of the project was 13 and the number of these visits that had documented depression screenings was eight (61.5%). See Appendix E for a graph of these results. There was a total of two depression diagnoses, zero mental health referrals, and two that received pharmacological treatment for depression.

Additionally, a pre-test and post-test was given to each employee prior to the depression PowerPoint (Appendix C). The average pretest score was 19% and the average post-test score was 100%. A survey was also given to both providers and MA's to assess if more time was spent in appointments post-intervention. The providers reported it did not significantly increase the time spent with the patient. The MA's reported it increased time spent with the patient at the beginning of the intervention, though by the end of the project it did not significantly increase time.

Discussion

Summary

This project did reach the goal of 60% of all new patient and annual wellness visits screened for depression with the PHQ-2/PHQ-9. Prior to this intervention, 0% of new patient or established patients were being screened for depression. There was a 61.5% increase in depression screenings at new patient and annual wellness visits within five weeks. These results were consistent with Loeb et al., (2015) findings in that staff who attended a specific depression

screening protocol training led to an increase in overall depression screening rates. However, Bajracharya et al., (2016) found that imbedding the PHQ-9 into the EHR cultivated the greatest results, which was not feasible in this project.

Interpretation

Studying the intervention led to identifying that during the first PDSA cycle the receptionist and MA were having difficultly remembering when to do a PHQ-2, thus a second PDSA cycle was implemented to improve the use of the screening tools. The second PDSA cycle included implementing a PHQ-2/PHQ-9 to all scheduled visits to decrease confusion. Other barriers included a lack of buy-in from the receptionists and MA's. Additionally, it was noted that the number of depression screenings performed increased when this student was in the clinic to remind each staff member to perform a screening.

Another unexpected benefit observed was a PHQ-2 and PHQ-9 being used more frequently when adjusting depression medications, which was not being performed prior to this intervention.

Limitations

There were several limitations to this quality improvement project. Of note, the sample size was small. This project ran in a rural clinic with a limited number of patients presenting for establishing visits or annual wellness visits. The intervention was only formally evaluated for five weeks, which also contributed to the small sample size. The process could be replicated, though may not be generalizable due to the setting and combined usage of both a physical chart and an EHR.

Conclusion

This quality improvement project aimed to increase depression screenings at new patient and annual wellness visits at a rural primary care clinic using the PHQ-2 and PHQ-9 screening tools. The first PDSA cycle showed underwhelming results and studying the interventions identified staff having difficulty remembering to perform the screenings for only new patient and annual wellness appointments. Thus, a second PDSA cycle was implemented to screen all scheduled appointments with a PHQ-2/PHQ-9. By the end of the second PDSA cycle, depression screenings were completed for 61.5% of the visits for new patients and patients being seen for annual visits. It was also noted that the screening tools were being used more frequently in the treatment of depression in addition to regular screening. Further interventions will be needed to continue increasing screening rates and increasing pharmacological treatment and mental health referrals once depression is identified. Creating a PHQ-2/PHQ-9 template within the EHR should be considered as a potential next-step intervention as well as collaborating with local mental health providers and facilities to aid in treatment and referrals.

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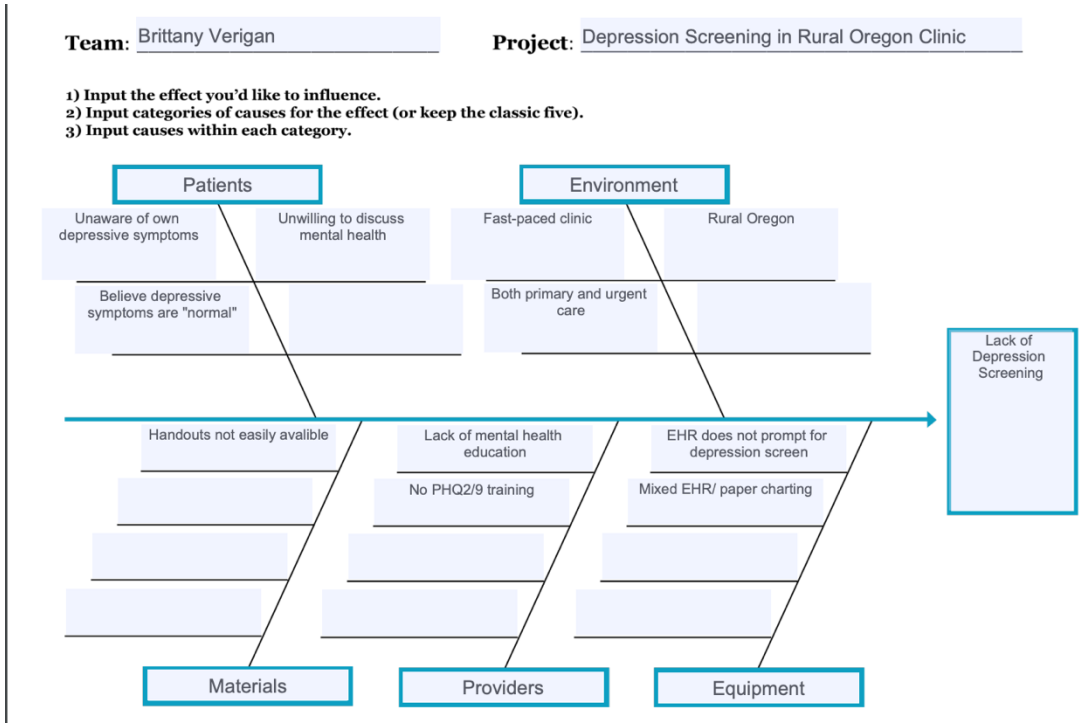
Appendices

Appendix A



Appendix B

Depression Screening

I. What is Depression?

   a. Diagnostic and Statistical Manual of Mental Disorders 5 (DSM-5)

      i. The criterion for diagnosis includes depressed mood or anhedonia for two weeks plus at least four of the following: appetite/weight changes, sleep disturbances, psychomotor agitation or retardation, fatigue/loss of energy, decreased ability to think or concentrate, feelings of worthlessness or excessive guilt, or suicidal ideation

II. Why Screen for Depression?

a. Depression is the leading cause of disability worldwide
b. The United States Preventative Task Force (USPTF) recommends a depression screening for every adolescent and adult
c. 10% of all primary care visits are related to depression
d. 15.1% of residents in Malheur County over the age of 65 suffer from depression compared to the state average of 14%

III. PHQ-2

IV. PHQ-9

V. Implementation

a. Receptionist role: identify wellness visits and attaching a two-sided paper to the chart that has the PHQ-2 on one side and the PHQ-9 on the second side
b. MA role: rooms the patient: conduct a semi-structured interview from the PHQ-2.
    i. Notify the provider if the patient reports a score of 3 or above.
    ii. This will prompt the provider to have a semi-structured interview based upon the PHQ-9 and proceed with interventions as needed.

Appendix C

1. True or False: The United States Preventative Task Force recommends all adolescents and adults be screened for depression?
2. Which two depression screening tools have been most studied?
3. What score on the PHQ-2 would warrant a follow-up PHQ-9?
4. What score on the PHQ-9 is considered moderated depression?

Appendix D

NOT HUMAN RESEARCH

July 20, 2022
Dear Investigator:

On 7/20/2022, the IRB reviewed the following submission:

Title of Study:	Implementing Depression Screening at Annual and New Patient Visits in a Rural Primary Care Clinic: A Quality Improvement Project
Investigator:	Heather Wiggins
IRB ID:	STUDY00024645
Funding:	None

The IRB determined that the proposed activity is not research involving human subjects. IRB review and approval is not required.

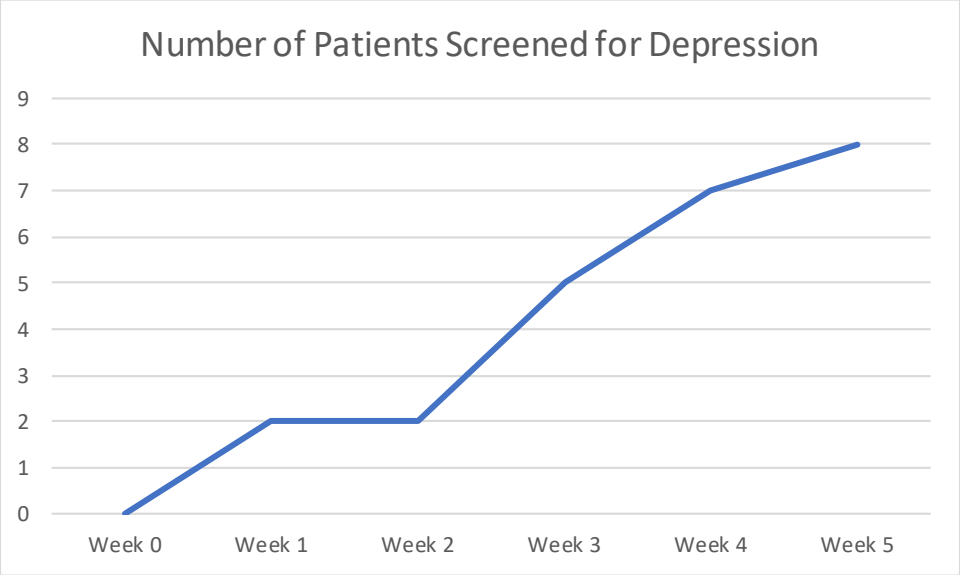
Certain changes to the research plan may affect this determination. Contact the IRB Office if your project changes and you have questions regarding the need for IRB oversight.

If this project involves the collection, use, or disclosure of Protected Health Information (PHI), you must comply with all applicable requirements under HIPAA. See the HIPAA and Research website and the Information Privacy and Security website for more information.

Sincerely,

The OHSU IRB Office

Appendix E


Number of Patients Screened for Depression
9
8
7
6
5
4
3
2
1
0
Week 0
Week 1
Week 2
Week 3
Week 4
Week 5