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Improving the Consistency and Accuracy of Depression Screening Using the PHQ-9 in a Behavioral Health Facility

Adaku Anike
Walden University

Walden University

College of Nursing

This is to certify that the doctoral study by

Adaku Anike

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Sue Bell, Committee Chairperson, Nursing Faculty
Dr. Jonas Nguh, Committee Member, Nursing Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

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Executive Summary: Staff Education Project

Improving the Consistency and Accuracy of Depression Screening Using the PHQ-9 in a Behavioral Health Facility

by

Adaku Anike

MS, Walden University, 2020

BS, North Carolina Agricultural and Technical State University, 2015

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Summary

Depression is a common psychiatric illness and one of the main causes of disability globally. Due to the high prevalence, a literature review of best practices indicated that depression screening be done at every initial and follow-up visit. The practice-focused question was: Does education increase staff knowledge to use the Patient Health Questionnaire-9 (PHQ-9) screening tool for improved identification and management of depression among adults and older adults at a behavioral health facility? Prior to this project, the site did not have formal education on how to use the PHQ-9 screening tool and patients were not consistently screened for depression during the initial and follow-up visits due to limited staff knowledge. The purpose of this project was to address this gap in practice by creating, delivering, and evaluating an evidence-based educational program for providers on the proper use of the PHQ-9 screening tool to identify and manage depression. The ADDIE model for nursing education guided the education involving 10 participants who completed 10-question, 5-point Likert scale pretest and posttest surveys. The collected data were analyzed using a paired *t* test to assess the participants' perceived knowledge improvement. The results showed a significant change from the pretest ($M = 2.20$, $SD = 1.14$) to the posttest scores ($M = 4.80$, $SD = .43$); $t(9) = -7.00$, $p < 0.001$. Improving providers' knowledge may create social change through an early depression diagnosis, a decrease in undiagnosed and untreated illness, and improved patients' health outcomes through a decrease in health-related complications of depression. Health equity may be promoted through consistency in depression screening, diagnosis, and treatment across patient population groups.

Background

Depression is one of the most common psychiatric illnesses and one of the main causes of disability globally (Gao et al., 2024). The National Survey on Drug Use and Health reported that about 16 million adults (6.7%) have had at least one major depressive episode, which includes only known cases in the United States (Ahrnsbrak et al., 2016). Depression can cause impaired perception in managing other health issues and is associated with suicide and a high mortality rate (Gilman et al., 2017). Although depression can be treated and managed, it is likely to go unnoticed for a specific period. In some cases, major depression can lead to severe impairments that decrease or interfere with a person's ability to perform their activities of daily living (National Institute of Mental Health (NIMH), 2021). Not only can depression be disabling, but it is also financially burdensome, with an estimated average treatment cost of about $650 per person, which is 210 billion dollars annually in the United States (Siniscalchi et al., 2020). The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) defines clinical depression as a minimum period of 2 weeks where an individual has low mood, loss of interest in pleasurable activities, hopelessness, worthless, decreased energy, irritability, concentration difficulty, poor sleep, and appetite changes (NIMH, 2021). Several consequences arise from unidentified, delayed, and untreated depression that leads to a decreased quality of life, high care costs, and comorbidities (Siniscalchi et al., 2020). Adequate knowledge and frequent use facilitated through comprehensive training on the PHQ-9 can enhance early detection, diagnosis, and treatment of depression.

This DNP project was completed in an outpatient behavioral health clinic that provides care for an average of 250 patients per year. The practice problem highlighted

at this clinic was that patients are not consistently screened during the initial and follow-up visits due to limited staff knowledge of the use and value of PHQ-9 screening tool for depression identification and management. Consequently, a staff education project was appropriate to address the gap as there was no prior formal education training module on using the PHQ-9 screening tool in the clinic. The clinical site leader reported that the screening tool is currently used at 40%, which is below the national average use of 60%. Therefore, the purpose of this project was to create, deliver, and evaluate an evidence based educational module for providers on the proper use of the PHQ-9 screening tool for the identification and management of depression. The project practice-focused question was: Does comprehensive education increase the knowledge of staff for use of the PHQ-9 in the management of depression in adults and older adults in a behavioral health facility? I expected that staff knowledge would be improved by addressing the practice gap through the educational module centered on the proper use of the PHQ-9 screening tool for the identification and management of depression.

Staff Education Project Development

A signed site agreement was obtained for permission to conduct the project at the facility. In compliance with Walden's Doctoral Education Staff Manual, the Institutional Review Board (IRB) determined that my project aligns with the parameters required for DNP Staff Education Project and was approved. Health Insurance Portability and Accountability Act (HIPAA) standards were maintained during the project. A base analysis of the clinic's current strategy for PHQ-9 use was reviewed. Using credible databases, I gathered evidence relevant to my topic including CINAHL Complete, Cochrane Database of Systematic Reviews, ProQuest Health Management Database,

PubMed, Walden University Library, Google Scholar, and EBSCO. The inclusion criteria for the literature search were peer-reviewed journals in English, published within the past 9 years from 2016 to 2025. Other reputable organizations such as the World Health Organization (WHO), Centers for Disease Control and Prevention (CDC), and National Institute of Mental Health (NAMI) provided a relevant worldwide perspective on the project's topic. The keywords used for the search strategy were obtained from the project practice question and Boolean operators to improve the process, including *depression*, *screening*, *depression management*, *recommendations for depression screening*, *evidence-based practice for depression*, *PHQ-9*, *depression questionnaire*, *depression module*, *staff education*, *mental health setting*, *outpatient behavioral health setting*, and *validity and reliability of the PHQ-9 depression screening tool*.

The literature review revealed evidence to answer the practice-focused question that implementing evidence-based education for staff members improves clinicians' knowledge and advances nursing practice. Improved understanding of the PHQ-9 screening tool for identifying and managing depression can be achieved through a comprehensive educational module for staff in clinical settings (Siu, 2016). An educational implementation that uses PowerPoint presentations of 30 minutes or less on depression will lead to an increase in knowledge and confidence levels in addressing depression (Beasley, 2021; Pearson et al., 2019). The effectiveness of these educational implementations is indicated by the pre- and post-assessment scores, showing they improved staff knowledge and ensured project success (Cardoso et al., 2021).

The 9-item PHQ-9 is a valid and reliable tool that helps healthcare professionals identify, screen, monitor, and measure the severity of depression in patients (Policastro

et al., 2023). Research has shown that PHQ-9 scores >10 have a high sensitivity of 85% and a specificity of 85%, but in older adults (60 years of age and above) specificity is 89% for screening for major depressive disorder (Negeri et al., 2021). PHQ-9 can be administered by oneself, face-to-face, or virtually. Appropriate use of the PHQ-9 screening tool is crucial. Since depression is frequently unrecognized and untreated, the evidence-based recommendation for early screening and identification can be achieved when clinicians have an enhanced knowledge of PHQ-9 use, resulting in positive patient outcomes (Porter, 2017). During the initial visit, clinicians use the PHQ-9 to facilitate the identification and diagnosis of depression symptoms and at each follow-up visit to monitor treatment response (APA, 2013; APA, 2022).

The education was developed using the five phases of the ADDIE model (see Appendix A) including analysis, design, development, implementation, and evaluation. The ADDIE model is a training tool that is adaptable, logical, organized, and tailored for effective learning and developmental programs with best practices (CDC, 2019). I worked closely with stakeholders to ensure that the module covered the necessary information. The ADDIE model provided evidence-based practice for learning approaches that promote workforce development in clinical environments (Patel et al., 2018). Each phase has a deliverable that launches the next phase and allows opportunities for feedback and updates to training while creating it.

The participants of the education consisted of 10 staff nurses who provided evaluations developed by me and based on the ADDIE model (see Appendix C). The staff were each assigned a specific identifier code P1 to P10 to facilitate accurate pretest and posttest data comparison. A self-reported 10-question pretest and posttest were used

to measure the outcome of the education (see Appendix B). The pretest was completed before the education implementation to evaluate the staff members' knowledge of PHQ-9 screening tool use. The 30-minute education session was then provided using a PowerPoint presentation (see Appendix D). The posttest was completed by the staff members immediately after receiving the education. The data were gathered through the 10-item, closed-ended survey created and developed by me based on a 5-point Likert scale where (1 = Strongly Disagree), (2 = Disagree), (3 = Neutral), (4 = Agree), and (5 = Strongly Agree); (Sullivan & Artino, 2013; see Appendix B). The PowerPoint presentation was emailed to the nurses for future reference. I analyzed the results using the Statistical Analysis Software to conduct descriptive analysis and paired *t* tests.

Results

The data were presented using a table and a chart. The participants showed varied knowledge of the education content on the pretest survey. Among the 10 nurse participants, two scored 80% on the post-test and the other eight nurses scored 100 % on the posttest. Table 1 shows the breakdown of the pretest and posttest assessment scores and score improvement in percentage of correct answers. The paired *t* test was performed to determine whether the changes in knowledge between the pretest and posttest were statistically significant. The result of a two-tailed *t* test was statistically significant with pretest ($M = 2.20$, $SD = 1.14$) to posttest ($M = 4.80$, $SD = .43$); $t(9) = -7.00$, $p < 0.001$ with α set at .05 (see Figure 1). Because $p < \alpha$, the results showed that the implementation significantly improved staff knowledge for using the PHQ-9 screening tool.

Table 1

*Comparison of Pretest and Posttest Results (*N *= 10)*

Obs	Participant	Pretest score	Posttest score	Improvement pct
1	P1	4	5	25
2	P2	3	5	67
3	P3	2	4	100
4	P4	1	5	400
5	P5	1	5	400
6	P6	2	5	150
7	P7	4	5	25
8	P8	1	5	400
9	P9	1	4	100
10	P10	2	5	150

Obs = Observation; pct = Percent.

Figure 1

T-test Result

Pretest and Posttest Trends by Participant

The TTEST Procedure

Difference: PretestScore - PosttestScore

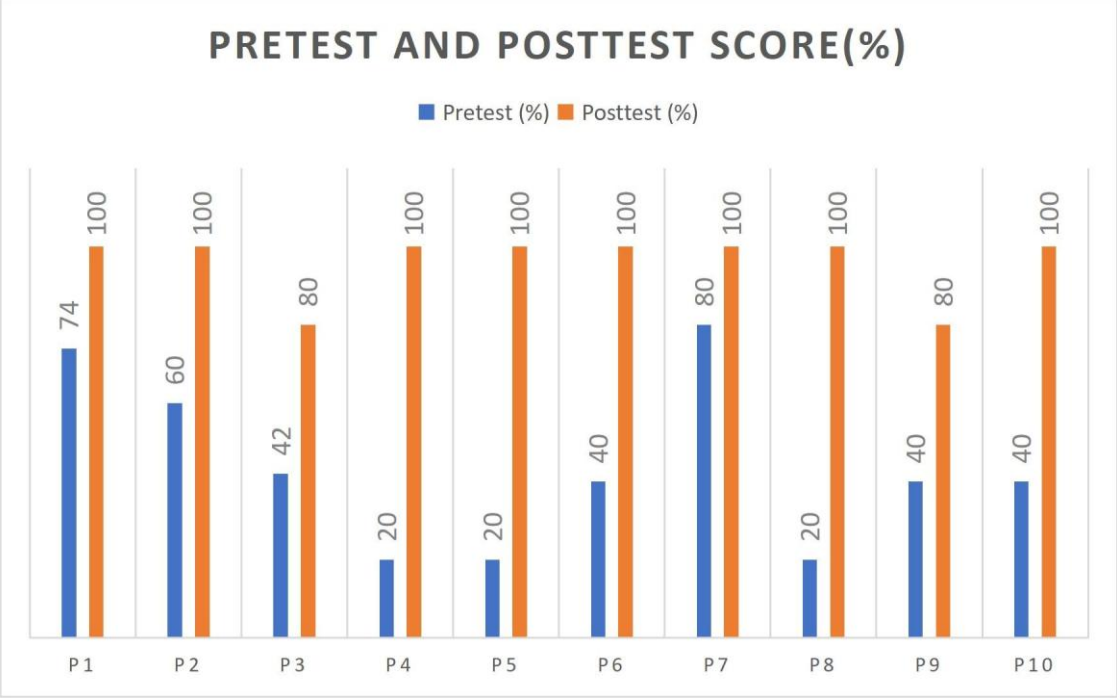
N	Mean	Std Dev	Std Err	Minimum	Maximum
10	-2.6000	1.1738	0.3712	-4.0000	-1.0000

Mean	95% CL Mean		Std Dev	95% CL Std Dev	
-2.6000	-3.4397	-1.7603	1.1738	0.8074	2.1429

DF	t Value	Pr > |t|
9	-7.00	<.0001

Figure 2

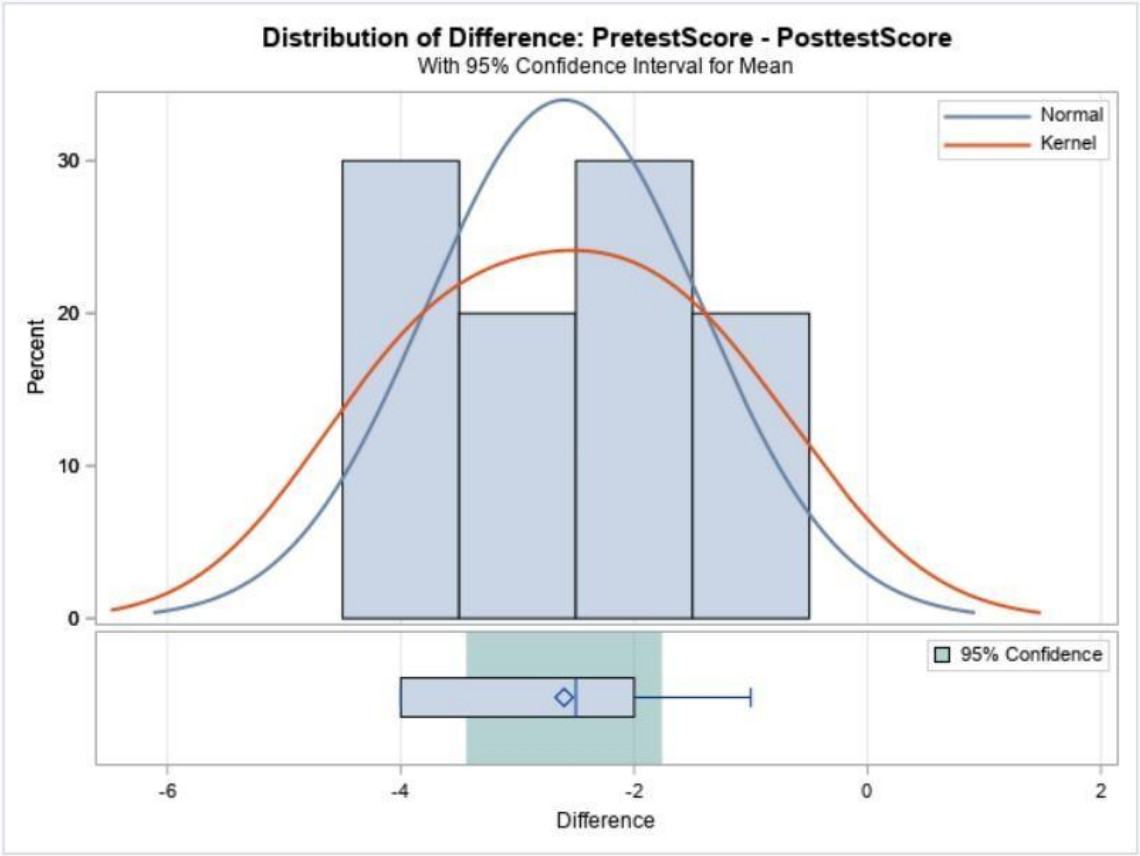
Bar Graph Comparison of Pretest and PostTest Results Expressed as a Percentage



In Figure 2, the blue bars, representing pretest scores, show significant variability among participants as pretest scores range from 20% to 80%. This finding suggests that participants started the training with differing levels of knowledge. The orange bars, representing posttest scores, indicate 80% to 100% for all participants, indicating that all participants had significant improvement in scores after the implementation.

Figure 3

Graph of T Test at 95% Confidence Interval



The graph visually illustrates the significant impact of staff education implementation, showing that all participants had improved posttest scores regardless of

their initial levels. This emphasizes the education module's effectiveness in addressing gaps in the staff members' knowledge of the PHQ-9 use. The result shows the effectiveness of staff education on the ability to properly and confidently use the PHQ-9 screening tool in patients with depression and accurately interpret the tool. Timely detection significantly impacts the outcome of any health issue (Porter, 2017). The main goal of this project was to increase the staff members' knowledge of the PHQ-9 screening tool to better manage depression in the adult and older adult population in the behavioral health setting. This educational program has also promoted a significant improvement in using best practices in clinical settings.

The results of the project are limited by the small sample size of the participants and the use of one facility, challenging the generalization of the findings. Using a larger sample size would have helped increase the study's relevance. There is a possibility that participants of self-reported surveys can produce socially desirable answers that are not objective and which can affect the validity of the findings. Self-reports are susceptible to response biases such as the potential to respond in a uniform pattern where positive or negative notions can be generalized (Kreitchmann et al., 2019).

The staff at the behavioral health facility reported that the project aligned with their patient population as the education on the PHQ-9 screening tool has shown to be effective; its benefits will impact all mental health providers caring for patients with depression. The PHQ-9 tool is concise and easy to use at any clinic appointment for new and existing patients with depression. The improved understanding of the PHQ-9 tool among healthcare providers beyond the local site will foster adequate screening and lead to positive outcomes for patients, their families, and communities.

Conclusions

The implementation received positive feedback from the clinical team due to the statistically significant results and the doctoral evidence-based project will guarantee enhanced practice guidelines and positive patient outcomes. This evidence-based educational module has shown improvement in the knowledge of the nursing staff in using the PHQ-9 screening tool in the behavioral health clinic. The staff reported satisfaction with project outcomes in improving patient care quality and the perceived benefits of promoting continued in-service training for other relevant clinical guidelines.

This project will positively impact social change by decreasing the incidence of unidentified, untreated, and poorly managed depression in patients seen in this clinic, consequently reducing the financial burden resulting from depression on the economy (Williams et al., 2017). Effective use of the educational information received from this project will promote the health and wellness of clients, families, and the community.

The project results reinforce the demand for continuing education in healthcare settings for providers to promote the benefits of DNP education in fostering quality and safe care delivery in nursing practice to ensure positive patient outcomes. Providers can base their clinical decision-making on these findings to develop treatments that are patient-centered to decrease the incidence of depression. Education on depression screening leads to a more inclusive approach that prioritizes diverse needs, reduces stigma, and offers equal opportunities for mental health care for all individuals regardless of background.

Patient outcomes based on the educational intervention in this project were not evaluated. Therefore, recommendations would be for further studies to focus on patient

outcomes based on early screening and correct depression diagnosis from the increased and consistent use of the PHQ-9 screening tool. Also, future studies can use a larger sample size to conduct this implementation for a longer period of time with follow-up reevaluation at 3- and 6-months post-implementation to compare results and improve the generalizability of the findings.

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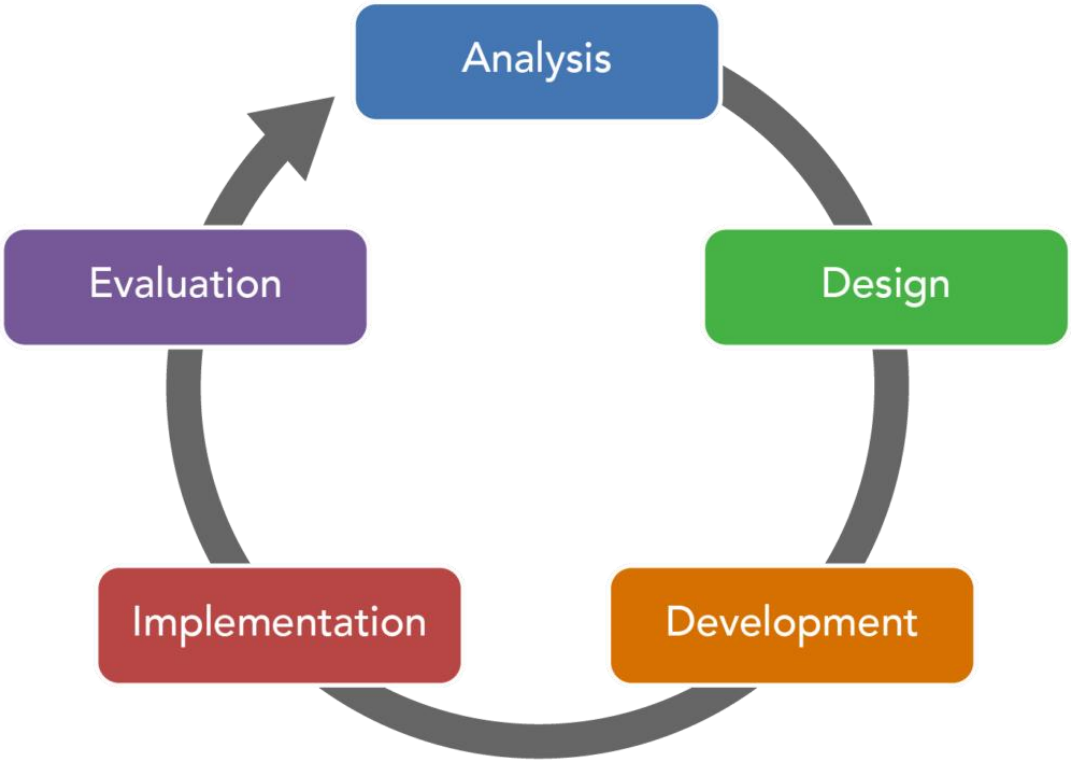
Appendix A: Analysis, Design, Development, Implementation, and Evaluation (ADDIE) Model



ADDIE Model. **Provided by**: Lumen Learning. **License**: ***CC BY: Attribution***

Appendix: B Pretest/Posttest

Survey of Staff Education on the Patient Health Questionnaire (PHQ-9) Evaluation of Knowledge and Self-Efficacy

In items 1 - 10 below, please respond with your appropriate level of agreement: 1 = Strongly Disagree (SD), 2= Disagree (D), 3= Neutral (N), 4= Agree (A), 5= Strongly Agree (SA).

Participant Code:

1. I understand the primary purpose of the PHQ-9 tool

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

2. I have adequate knowledge in using the PHQ -9 for depression screening

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

3. I have adequate knowledge in using the PHQ -9 for depression diagnosis

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

4. I have adequate knowledge in using the PHQ-9 for monitoring depression management

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

5. I have adequate knowledge in using the PHQ -9 tool for measuring the severity of depression

1. Strongly Disagree
2. Disagree

3. Neutral
4. Agree
5. Strongly Agree

6. I have the desire to receive further education that will improve my knowledge in utilizing the PHQ-9 tool

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

7. I am confident in my ability to use the PHQ-9 tool for depression screening

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

8. I am confident in my ability to use the PHQ-9 tool for diagnosing depression

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

9. I am confident in my ability to use the PHQ-9 tool for monitoring the progression of depression management

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

10. I am confident in my ability to use the PHQ-9 tool for measuring the severity of depression

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

Rating Scale: Please select the option that best reflects your level of agreement with each statement.

Confidentiality: We will keep your responses confidential and use them to improve future educational sessions.

Thank you for your contribution.

Appendix: C ADDIE Survey Questionnaire Participant Feedback

On a 5-point scale of 1 = Strongly Disagree (SD), 2= Disagree (D), 3= Neutral (N), 4= Agree (A), 5= Strongly Agree (SA).

Please rate your satisfaction with the training. Question 4 is open-ended.

1. I am satisfied with the content of the education

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

2. I am satisfied with the delivery of the education

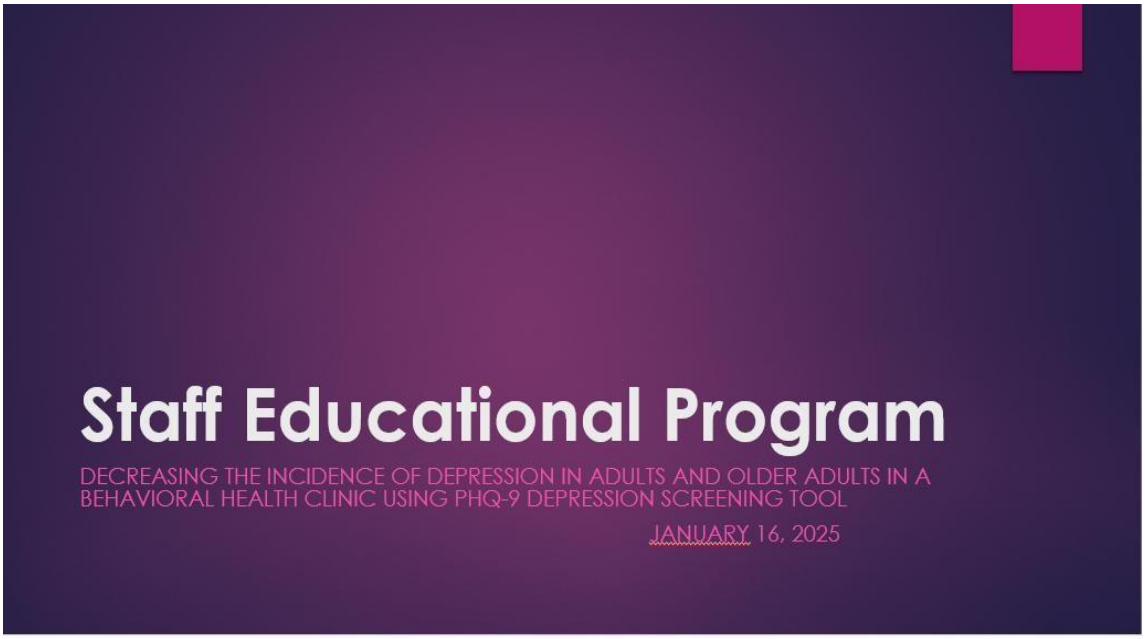
1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

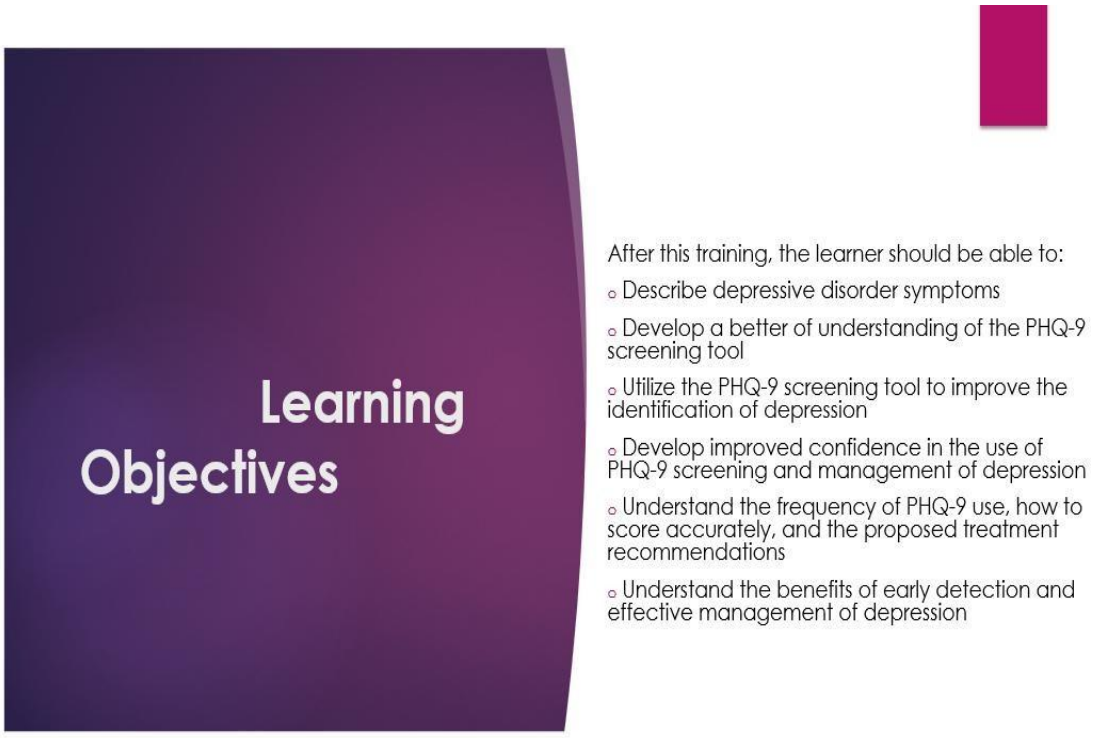
3. I am likely to implement the educational content in my practice

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

4. Is there anything you would suggest for improvement of the educational content and its delivery for future training?

Appendix D: PowerPoint Presentation of Education Program to Participants





Significance Of The Education

- To highlight the importance of depression screening using the PHQ-9 tool
- To improve the knowledge level of the staff in using the PHQ-9 depression screening tool
- To improve the staff's knowledge of the best practices and standards for improving depression management
- To improve the staff's understanding of the causes and impact of depression
- To reinforce the need for depression screening at intakes and every follow-up in patients
- To easily identify the signs and symptoms of depression in patients with an emphasis on patients that need further assessment for suicide risk
- To improve patient outcomes and quality of life

Important Questions For Your Practice

1. What tool does your practice currently use to screen for depression?
2. What percentage of your patients are adequately screened for depression utilizing the PHQ-9 depression screening tool?
3. How often do you screen patients for depression using the PHQ-9?
4. How can early detection benefit your patients and your practice?

Introduction

- Depression is one of the most common psychiatric illnesses and one of the main causes of disability worldwide (Gao et al., 2024).
- World Health Organization (WHO, 2015) reported that 350 million people experience depression globally.
- In the United States, more than 8 million people visit the doctor's office yearly for depression (Ferenchick, Ramanu & Pincus, 2019)
- Although depression can be treated and managed, it is likely to go unnoticed for a specific period.
- Screening and follow-up should be the standard clinical practice for mental health disorders (APA, 2013)
- The Primary Care Evaluation of Mental Health Disorder Patient Health Questionnaire(PRIME-MD PHQ) was developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke, and colleagues in the mid-1990s at Columbia University
- PHQ-9 is a reliable tool that helps healthcare professionals identify, screen, monitor, and measure the severity of depression in patients (Policastro et al., 2023). Note that Question 9 is a single screening question on suicide risk. A patient who answers yes to question 9 needs further assessment for suicide risk by an individual who is competent to assess this risk.

The PHQ-9 Screening Tool

- The PHQ-9 is a 9-item multipurpose tool for screening, diagnosing, and monitoring/measuring the severity of depression in healthcare settings.
- It incorporates the DSM-5 criteria with other symptoms of major depression (Levis et al., 2019)
- During the initial visit, the PHQ-9 is used to identify depressive symptoms by asking the 9 questions representing the DSM-5 criteria for major depressive disorder (Levis et al., 2019).
- It is used for the continuous measurement of depression symptom severity during follow-up
- The healthcare professional reviews the completed questionnaire, and applies the diagnostic algorithm at the bottom of the page
- Total scores of 5, 10, 15, and 20 represent cut points for mild, moderate, moderately severe, and severe depression, respectively.
- The PHQ-9 can be administered by oneself, face-to-face and by phone

The Importance of PHQ-9 Use

- Utilizing a standardized instrument will reveal baseline severity and this will be documented for record purposes
- Serves as a guide for treatment of depression
- Beneficial for continuous assessment, monitoring response to treatment, and remission rates
- Management of depression presents an emotional, physical, and mental burden for patients and their families including high medical costs and the likelihood of adverse outcomes (WHO), 2014)

According to the Community Preventative Service Task Force (2015), appropriate depression screening eliminates

1. Morbidity
2. Misdiagnosis
3. Poor management or undertreatment
4. Poor outcome

Why IS Screening Needed?

- Recommended for best practice
- Important for detecting early signs of depression
- To enhance the identification of patients presenting with depression
- Evaluation of symptom severity to guide treatment recommendation
- Depression screening allows clinicians to identify patients with high-risk of suicide (WHO, 2014).
- Depression screening also offers opportunities to highlight the underlying causes of depression symptoms including intimate partner violence (Savoy & O'Gurek, 2016).
- Individuals with positive screening scores are re-evaluated to determine the best treatment option
- The PHQ-9 is a valid and reliable tool for screening for depression

When Should Screening be Administered

- The U.S. Preventative Task Force (UPSTF) recommends depression screening for individuals 12 to 18 years and Adults (Siu, 2016)
- Performed on all new patients at the initial visit
- Performed at every visit for early detection, treatment, and follow-up care
- When adults have major stressors and chronic illnesses
- The patients should be informed of the need for the tool, the reason for the assessment, and the scoring at the completion.

Depression Management Process

1

Depression Management using the PhQ-9 tool involves three phases namely screening, treatment initiation, follow-up and maintenance (Sanchez, Eghaneyan & Trivedi, 2016)

2

Following depression detection, clinicians recommend appropriate treatment options for patients (APA, 2016)

3

Subsequently, clinicians perform follow-up assessments to determine if the patient's symptoms are improving on the treatment initiated (APA, 2016)

Patient Health Questionnaire-9

Over the last 2 weeks, how often have you been bothered by the following problems?

(0= Not at all; 1= Several days; 2= More than half the days; 3=Nearly everyday)

1. Little interest or pleasure in doing things
2. Feeling down, depressed, or hopeless
3. Trouble falling or staying asleep, or sleeping too much
4. Feeling tired or having little energy.
5. Poor appetite or overeating
6. Feeling bad about yourself or that you are a failure or have let yourself or your family down.
7. Trouble concentrating on things, such as reading the newspaper or watching television.
8. Moving or speaking so slowly that other people could have noticed. or the opposite, being so fidgety or restless that you have been moving around a lot more than usual
9. Thoughts that you would be better off dead or of hurting yourself in some way.
10. If you checked off any problems, how difficult have those problems made it for you to do your work, take care of things at home, or get along with other people? (not difficult at all, somewhat difficult, very difficult, extremely difficult)

Proposed treatment recommendation for PHQ-9

- According to the PHQ-9 depression severity score, proposed treatment actions generally include:

- **Score 0-4 (None-Minimal):** No treatment needed, monitor with follow-up checks.
- **Score 5-9 (Mild):** Watchful waiting, repeat PHQ-9 at follow-up, consider lifestyle modifications
- **Score 10-14 (Moderate):** Develop a treatment plan, consider counseling or psychotherapy, and/or pharmacotherapy
- **Score 15-19 (Moderately Severe):** Active treatment with medication (pharmacotherapy) and/or psychotherapy
- **Score 20-27 (Severe):** Immediate initiation of pharmacotherapy, expedited referral to a mental health specialist if needed
- . Note: Question 9 is a single screening question on suicide risk. A patient who answers yes to question 9 needs further assessment for suicide risk by an individual who is competent to assess this risk. A safety plan should be completed if there is a self-harm alert.

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