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A DNP-led Educational In-Service to Increase Depression Screening in Primary Care

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Abstract

Background: Depressive disorders are a major contributor to disability in the United States and worldwide. They are associated with multiple comorbid conditions including cardiovascular disease, obesity, stroke, and premature mortality. In the US, only 4.2% of primary care patients are being screened for depression and approximately 50% of cases of major depression are being missed.

Purpose: Implementation of a nurse practitioner led educational intervention, discussing when, why, and how to screen utilizing the PHQ-2 and PHQ-9 screening tools, with the medical assistant staff in order to increase compliance with annual screening.

EBP Model/Frameworks: The Iowa model was used to guide implementation of this project (Iowa Model Collaborative et al., 2017).

Evidence-Based Interventions: Evidence based interventions include education to medical assistant (MA) staff on administration of the PHQ-2 during check in and subsequent PHQ-9 administration for PHQ-2 scores ≥3, and practitioner review of PHQ-9 scores with patients.

Evaluations/Results: Evaluation of results of this project included an increase in the number of patients screened during well visits from 72% to 83%, resulting in a significantly lower number of persons not screened, ($x^2 = 8.91$, $p = 0.003$).

Implications for Practice: In 2010, $80,377 billion were spent in the US on major depressive disorder. With increased screening and treatment in the primary care setting, unnecessary costs of undiagnosed depression can be avoided, saving approximately $38,101 billion per year. The implementation of a one-time MA educational in-service can increase compliance with screening at well visits. Annual screening helps establish a long-term relationship between patient and provider where patients feel that all their needs are being met.

Conclusion: Standardizing the screening for unmanaged depressive symptoms can be incorporated into the check-in process. While these primary care practitioners at levels higher than the national average (72% vs 4.2%), the implementation of MA education/training for PHQ-2/PHQ-9 assessment during the check-in process significantly increased the number of patients screened at annual well visits. Through increased screening practitioners are able to diagnose patients sooner, provide necessary resources and increase quality of life.

Key Words: depression, depression screening, patient health questionnaire, PHQ-2, PHQ-9

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Clinical Problem

Depressive disorders are a major contributor to disability in the United States (US) and worldwide. They are associated with numerous comorbid conditions including the development of cardiovascular diseases, obesity, stroke, and an increased risk of self-harm, and premature mortality (Akincigil & Matthews, 2017). As a result, depression is ranked as the third leading cause of disability in the US which places a substantial financial burden on the country each year (Smithson & Pignone, 2017). It has been estimated that the prevalence of depressive symptoms in primary care is as high as 14% and that approximately 45% of people who commit suicide had visited their primary care provider within 1-month of their death (Akincigil & Matthews, 2017). Despite these staggering facts, and the United States Preventative Services Task Force (USPSTF) recommendation to screen for depression in all adult populations, recent studies show that only 4.2% of primary care patients are being properly screened (Akincigil & Matthews, 2017; Siu et al., 2016). In the "absence of systematic screening, family physicians miss at least 50% of cases of major depression (Arroll et al., 2010, p. 348)". Addition of the Patient Health Questionnaires (PHQ-2/PHQ-9) to the patient check- in process and implementation of an educational intervention on why and how to screen with medical assistant (MA) staff can increase compliance with screening. Screening is crucial for early detection and treatment of depressive symptoms, is more cost-effective, and may well be life-saving.

Materials and Methods

The PICO Question

In an adult primary care clinic, does implementation of a DNP-led educational intervention with MAs, compared to standard training, increase the percentage of patients screened appropriately for depression utilizing the PHQ-2 in 4 months?

Search Strategy

The review of literature was completed using the following search engines: CINAHL, PubMed, and Cochrane. An initial search was completed using the keywords: "depression", "screening", and "primary care", as well as combinations of these terms. Through this search over 1,000 relevant articles were found. The search was further limited to articles containing the terms "depression and PHQ-2" OR "depression and primary care". Within those search terms the list was narrowed by only accessing articles written in English and published in the last 5 years. A total of 28 articles were considered for selection, including reference lists of studies, and 4 were chosen for review with this project. These studies were selected based on their relevance to the topic and their evidential ranking based on the John Hopkins pyramid for evaluating nursing research. Of the chosen articles, three ranked level 1- 1 randomized control trial and 2 systematic reviews, and one ranked level 3- cohort.

Synthesis of Study Results

Depression is often misdiagnosed in the primary care setting, despite the high prevalence in the US and worldwide. Until 2010 generalized screening for depressive symptoms was not a billable service which is likely a contributing factor to a lack of prioritization on screening from the practitioner perspective. A study completed in 2017 showed that the overall screening rate of 33,653 physician-patient encounters was only 4.6%, even though depression screening is now

reimbursable (Akincigil & Matthews, 2017). Of these encounters, 47% had a new diagnosis of depression after screening (Akincigil & Matthews, 2017) which suggests a high positive-predictive value of current screening tools. Many of the encounters that used screening tools did so via an electronic health record (EHR). The study concluded that while screening tools have high accuracy they are not being administered per suggested guidelines and that integrating depression screening tools into an EHR may increase compliance in screening (Akincigil & Matthews, 2017).

Both the PHQ-9 and PHQ-2 have been widely used since inception in the late 1990s. The largest validation study to date was completed exclusively in primary-care patients in New Zealand in 2010 and has been cited in many articles since. This study was a "3-armed randomized control trial of screening for depression in primary care: one group received the PHQ-9; a second group received the Two Questions with Help Question (TQWHQ); and the third, a control group, received no screening (Arroll et al., 2010, p. 349)". All groups received a computerized Composite International Diagnostic Interview (CIDI) as a reference standard. Of the 7,757 patients within the study 2,642 completed the PHQ-9 and the CIDI (Arroll et al., 2010). Analysis of the completed PHQ-9 screeners was completed to extrapolate data on the significance of the PHQ-2 screening tool. The study reported that "sensitivity and specificity of the PHQ-2 for diagnosing major depression were 86% and 78%, respectively, with a score of 2 or higher and 61% and 92% with a score 3 or higher; for the PHQ-9, they were 74% and 91%, respectively, with a score of 10 or higher (Arroll et al., 2010, p. 348)" and a suggestion to use the PHQ-2 screener with a threshold score of 3 or higher for diagnosis. A more recent study found similar sensitivity and specificities for both the PHQ-2 and the PHQ-9 but suggested that "a two-step procedure using PHQ-2 and then PHQ-9 (Mitchell, Yadegarfar, Gill, & Stubbs, 2016, p.

136)" should be completed to reduce the burden of administering the PHQ-9 since it would only apply after a positive PHQ-2 screen. A third study concluded that using a threshold of 2 or greater on the PHQ-2 would yield a higher sensitivity but would also increase rates of false-positives (Manea et al., 2016). It was suggested that the threshold be changed to ≥2 in high-risk populations or that the PHQ-9 be administered subsequently to aid in detecting true positives.

A thorough analysis of the research led the DNP student to conclude that administering the PHQ-2 to all patients through an MA during the check-in process would increase screening in the primary care setting. Having the PHQ-2 prepopulate in the EHR system would make it accessible during patient check in and a DNP-led educational in-service would provide the MA's with the knowledge they need to properly screen. A threshold of ≥3 on the PHQ-2 screener was used as a trigger to alert the MA to administer the PHQ-9 and prompt further review by the practitioner.

Clinic Based Project Development

Nationwide primary care practitioners do not routinely screen for depression in the outpatient setting. Several practitioners, as well as MAs, at San Diego Sports Medicine, a family practice, had voiced an inadequate knowledge of screening tools, when it is appropriate to screen, or how to follow-up after a positive score has been obtained. It was expected that less than 10% of patients within the clinic had been screened appropriately in the past 4 months.

Elizabeth Williams D.O., the project mentor at San Diego Sports Medicine helped to coordinate the stakeholder presentation with the other physicians. Once the presentation was given and two other physicians were on board, Dr. Rodriguez and Dr. Uveli, a letter of approval was written by both Dr. Williams and Dr. Joseph Burkard, faculty mentor. These letters were submitted from the University of San Diego (USD) to the Institutional Review Board (IRB) for

approval. Once approval was obtained the DNP-student held a 15-minute educational in-service for MAs in which depression screening utilizing the PHQ-2 was discussed, barriers to screening were addressed, and knowledge was assessed using the teach back method. After the in-service a retrospective chart review was completed, and the project was piloted. Data was collected and analysis was completed 4 months after initiation.

Establishing SMART Goals

Short-Term Goals:

1. Medical Assistants will demonstrate increased knowledge of screening using the teach back method post-education.
2. Medical Assistants increase PHQ-2 screening of patients from baseline of 72% to 80% within 4 months

Long-Term Goals:

1. Medical Assistants increase PHQ-2 screening of patients from baseline of 72% to 90% within 1 year.

Anticipated Project Impact

An article outlining the economic burden of major depressive disorder (MDD) was published by The Journal of Clinical Psychiatry in 2015. Authors compared increasing rates of depression in the US between 2005 and 2010 and the increased burden it placed on both the patient and economy (Greenberg, Fournier, Sisitsky, Pike, & Kessler, 2015). In 2010 it is estimated that MDD and its comorbid conditions cost the US $210.5 billion in direct and indirect costs with $80,377 billion of those dollars being spent on MDD alone (Greenburg et al., 2015). Direct costs are medical and pharmacological and indirect are suicide and workplace-related costs. With increased screening and treatment in the primary care setting more money could be

delineated to outpatient services and the other medical costs, such as inpatient and emergency services, would be avoided. The combination of these extra medical costs plus suicide and workplace related costs adds up to an astounding $59,239 billion per year (Greenberg et al., 2015). An increase in outpatient screening and treatment services would cost an estimated $42,276 billion, still saving the economy approximately S38,101 billion per fiscal year.

Measurement Period

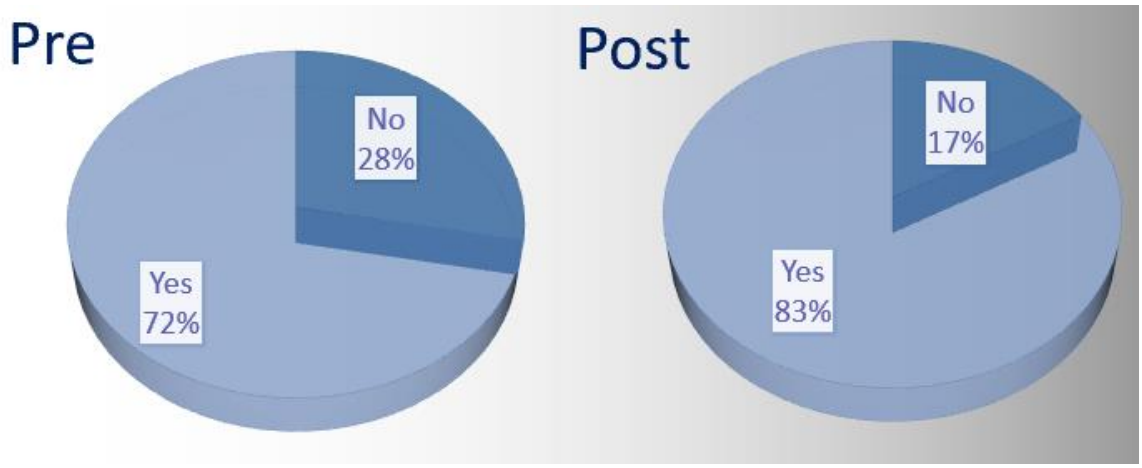
After the educational inservice and the retrospective chart review was completed the study was implemented. Our goal was to collect data on all well-visits, including annual physicals, well-woman visits, and annual health assessments, seen at two San Diego Sports Medicine clinics over a four month period. Post-intervention data was then analyzed and compared to pre-intervention data to assess for usefulness of the educational intervention.

Evaluation and Results

Upon initiation of this project it was expected that less than 10% of patients had been adequately screened for depressive symptoms at San Diego Sports Medicine in the 4 months prior. Data collected during the retrospective chart review concluded that Drs Williams, Rodrigez and Uvelli were in fact screening 72% of patients on average and that there was no statistical significance in screening between the practitioners. With the addition of MA education led by the DNP student, screening increased to 83%, which resulted in the post-intervention proportion of patients not screened being significantly lower ($x^2 = 8.91$, $p = 0.003$) as depicted in the graph below. Data collected showed no statistical significance in the number of patients screened per practitioner, or in the type of visits being screened (Figure 1).

Figure 1

A Comparison of Number of Patients Screened Utilizing the PHQ-2



Discussion and Expected Outcomes

Strengths

The addition of the PHQ-2 screening tool to the Epic Smartset for well-visits, including general physical examinations, well-woman visits, and annual health examinations, was a quick and simple way to assure that the questionnaire pre-populated during the patient check-in process. The medical assistants communicated openly with the DNP-student about their perceived barriers to screening during the educational inservice. This open dialogue led to questions and concerns being rapidly addressed and helped the study get up and running quickly.

Limitations

One of the major limitations of this study was the inconsistency in the medical teams within San Diego Sports Medicine. The educational in-service was held for the three MAs that the DNP-student was told worked directly with the participating physicians. Throughout the study several other MAs worked with these physicians, and some of the participants in the study left working at San Diego Sports Medicine for other employment opportunities. In addition, one of the physicians worked once per week at an affiliated urgent care. The educational in-service was held for all 5 MA's working at this setting, but given the variable structure of this environment versus the primary care practice it is likely that results could differ. Lastly, the data

collected only mentioned if the PHQ-2 screener was given or not, but did not review the possibilities behind why the screening wasn't completed. It is possible that some of the patients not screened had refused and those were counted negatively despite the MA's attempt to screen.

Cost-Benefit Analysis

A cost-benefit analysis has been performed using information from a journal article titled "Screening Your Adult Patients for Depression" which highlights average reimbursement rates per insurance provider nationwide (Savoy & O'Gurek, 2016). Accounting for the time that both the medical assistant and physician will spend administering and reviewing the screening tools, the implementation of this project cost approximately $218. The total revenue earned upon billing for PHQ-9 administration, using CPT code 99420, among 21 patients who scored ≥3 on the PHQ-2, earned a net-profit of $117. This analysis calculates the revenue earned by only three physicians during a quarter of the year. If every physician in San Diego Sports Medicine, for a total of 9 physicians, were to implement this project their revenue from depression screening alone would total $4,032 annually.

Clinical Implications

In addition to the revenue that clinics can receive for depression screening there is also nationwide healthcare savings to consider. In 2010, $80.4 billion was spent in the United States on major depressive disorder. Many of these costs were incurred when persons were mis- or underdiagnosed, leading to a need for emergency services and inpatient treatment. With increased screening and treatment in the primary care setting, unnecessary costs of undiagnosed depression can be avoided, saving approximately $38.1 billion per year. The implementation of a one-time MA educational in-service can aid in increasing the number of patients screened, therefore increasing revenue and decreasing healthcare costs.

Conclusion and Recommendations

Standardizing the screening for unmanaged depressive symptoms can easily be incorporated into the check-in process. The implementation of a one-time educational in-service is a great way to assess staff knowledge of screening and to discuss any potential barriers. The combination of easier access to the screening too, and dedicated depression screening education does increase the number of patients properly screened during well-visits in the outpatient setting. Through increased depression screening, practitioners are able to diagnose patients sooner and provide the necessary resources.

References

Akincigil, A., & Matthews, E. B. (2017). National rates and patterns of depression screening in primary care: Results from 2012 and 2013. *Psychiatric Services, 68*(7), 660–666. https://doi.org/10.1176/appi.ps.201600096

Arroll, B., Goodyear-Smith, F., Crengle, S., Gunn, J., Kerse, N., Fishman, T., Fallon, K., & Hatcher, S. (2010). Validation of PHQ-2 and PHQ-9 to screen for major depression in the primary care population. *Annals of Family Medicine, 8*(4), 348–353. https://doi.org/10.1370/afm.1139

Greenberg, P. E., Fournier, A.-A., Sisitsky, T., Pike, C. T., & Kessler, R. C. (2015). The economic burden of adults with major depressive disorder in the United States (2005 and 2010). *The Journal of Clinical Psychiatry, 76*(2), 155–162. https://doi.org/10.4088/JCP.14m09298

Iowa Model Collaborative, Buckwalter, K. C., Cullen, L., Hanrahan, K., Kleiber, C., McCarthy, A. M., Rakel, B., Steelman, V., Tripp-Reimer, T., Tucker, S. (2017). Iowa Model of evidence-based practice: Revisions and validation. *Worldviews on Evidence-Based Nursing*, *14*(3), 175–182. https://doi.org/10.1111/wvn.12223

Manea, L., Gilbody, S., Hewitt, C., North, A., Plummer, F., Richardson, R., Thombs, B. D., Williams, B, & McMillan, D. (2016). Identifying depression with the PHQ-2: A diagnostic meta-analysis. *Journal of Affective Disorders, 203*, 382–395. https://doi.org/10.1016/j.jad.2016.06.003

Mitchell, A. J., Yadegarfar, M., Gill, J., & Stubbs, B. (2016). Case finding and screening clinical utility of the Patient Health Questionnaire (PHQ-9 and PHQ-2) for depression in primary

care: Aa diagnostic meta-analysis of 40 studies. *BJPsych Open, 2*(2), 127–138. https://doi.org/10.1192/bjpo.bp.115.001685

Schaffer, M. A., Sandau, K. E., & Diedrick, L. (2013). Evidence-based practice models for organizational change: overview and practical applications. *Journal of Advanced Nursing, 69*(5), 1197–1209. https://doi.org/10.1111/j.1365-2648.2012.06122.x

Smithson, S., & Pignone, M. P. (2017). Screening adults for depression in primary care. *Medical Clinics of North America, 101*(4), 807–821. https://doi.org/10.1016/j.mcna.2017.03.010

Siu, A. L., Bibbins-Domingo, K., Grossman, D. C., Baumann, L. C., Davidson, K. W., Ebell, M., Garcia, F. A., Gillman, M., Herzstein, J., Kemper, A. R., & Krist, A. H. (2016). Screening for depression in adults: US Preventive Services Task Force recommendation statement. *JAMA, 315*(4), 380–387. https://doi.org/10.1001/jama.2015.18392

May 17, 2019 3:06 PM PDT

Shaylyn White
Hahn School of Nursing & Health Science

Re: Exempt - Initial - IRB-2019-449, Screening for Depression in Primary Care Utilizing the PHQ-2/PHQ-9 Screening Tools

Dear Shaylyn White:

The Institutional Review Board has rendered the decision below for IRB-2019-449, Screening for Depression in Primary Care Utilizing the PHQ-2/PHQ-9 Screening Tools.

Decision: Exempt

Selected Category: Category 4. Secondary research for which consent is not required: Secondary research uses of identifiable private information or identifiable biospecimens, if at least one of the following criteria is met:
(i) The identifiable private information or identifiable biospecimens are publicly available;
(ii) Information, which may include information about biospecimens, is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained directly or through identifiers linked to the subjects, the investigator does not contact the subjects, and the investigator will not re-identify subjects;
(iii) The research involves only information collection and analysis involving the investigator's use of identifiable health information when that use is regulated under 45 CFR parts 160 and 164, subparts A and E, for the purposes of "health care operations" or "research" as those terms are defined at 45 CFR 164.501 or for "public health activities and purposes" as described under 45 CFR 164.512(b); or
(iv) The research is conducted by, or on behalf of, a Federal department or agency using government-generated or government-collected information obtained for nonresearch activities, if the research generates identifiable private information that is or will be maintained on information technology that is subject to and in compliance with section 208(b) of the E-Government Act of 2002, 44 U.S.C. 3501 note, if all of the identifiable private information collected, used, or generated as part of the activity will be maintained in systems of records subject to the Privacy Act of 1974, 5 U.S.C. 552a, and, if applicable, the information used in the research was collected subject to the Paperwork Reduction Act of 1995, 44 U.S.C. 3501 et seq.

Findings: None

Research Notes:

Internal Notes:

Note: We send IRB correspondence regarding student research to the faculty advisor, who bears the ultimate responsibility for the conduct of the research. We request that the faculty advisor share this correspondence with the student researcher.

The next deadline for submitting project proposals to the Provost's Office for full review is N/A. You may submit a project proposal for expedited or exempt review at any time.

Sincerely,

Dr. Thomas R. Herrinton
Administrator, Institutional Review Board

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