7-12-2018

Aligning With Patient-Centered Medical Home Standards: Depression Screening in Women's Health

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A Co-Authored Dissertation submitted to

The Graduate School at the University of Missouri-St. Louis

in partial fulfillment of the requirements for the degree

Doctor of Nursing with an emphasis in Women's Health Nurse Practitioner

August 4, 2018

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Abstract

Problem: The Patient Centered Medical Home (PCMH) model of care improves health care quality and patient experience of care, and decreases costs. Depression screening is a requirement for becoming a PCMH. The purpose of this quality initiative was to obtain baseline data to describe depression screening rates among female adult patients receiving women's health care within a Midwestern public health department seeking PCMH recognition.

Methods: The study utilized a descriptive, observational design and was guided by the Plan-Do-Study-Act framework. A retrospective medical record review was used to assess the rate of depression screening utilizing the PHQ-2 and PHQ-9 tools, and the rate of treatment.

Results: In the pilot study period there were 417 documented visits, and the PHQ-2 depression screening rate was 32.61% (n = 136). The rate for a PHQ-9 was 5.92% (n = 8), and the treatment rate was 2.95% (n = 4). Linear regression analyses found that positive PHQ-2 screenings significantly predicted the occurrence of PHQ-9 screenings ($p < .001$). Furthermore, positive PHQ-2 and PHQ-9 screenings significantly predicted the rate of treatment ($p < .001$).

Implications for Practice: Findings support the continued use of a validated depression screening tool to identify depression risk or other related mental health risks. Prior to this project, there was no formal depression screening. Women's health patients were identified for depression risk through screening who may not have otherwise been identified. Through successful implementation of the PHQ-2 and PHQ-9 tools, the public health department is better prepared to achieve PCMH recognition.

Aligning With Patient-Centered Medical Home Standards: Depression Screening in Women's Health

Traditional primary care settings often deliver fragmented care which can be confusing for patients and providers to navigate when multiple providers are needed (Applequist, Miller-Day, Cronholm, Gabbay, & Bowen, 2017). Fragmented care results in higher healthcare costs, lower quality of care, and increased rates of preventable hospitalizations (Frandsen, Joynt, Rebitzer, & Jha, 2015). An increasingly utilized model of care addressing these concerns is the patient-centered medical home (PCMH). The goal of PCMH is to provide the "triple aim" of care: better experience, quality, and cost (National Committee for Quality Assurance [NCQA], 2014). The core of PCMH is well-coordinated care that is patient-centered and team-based, continuous across the healthcare system, follows best practices for safety and quality, uses novel methods to communicate with patients, and integrates payment reform (Jackson et al., 2013; Shi et al., 2017). Achieving PCMH recognition is a rigorous process usually taking several years, and small changes over time lead to consistent care and improved patient outcomes.

Fairbrother, Young, Janssen, Antony, and Tucker (2015) reported that depression among women can cause significant life-time disabilities. In general, women are 1.7 times more likely than men to suffer from depression (Farr, Dietz, Gibbs, Williams, & Tregear, 2011). One in seven women experience depression in pregnancy and postpartum, and is known as perinatal depression (American College of Obstetricians and Gynecologists [ACOG], 2015). Untreated perinatal depression has negative effects on women and their families, and is associated with "adverse pregnancy outcomes, compromised parenting, impaired affect and behavior regulation, and insecure attachment

in offspring" (Fairbrother et al., 2015, p. 1). The ACOG (2015) has recommended screening pregnant women at least once in pregnancy and postpartum for depression symptoms. In addition, providers should be prepared to treat and refer as needed, with appropriate guidelines for accurate diagnosis, treatment, and follow-up available (ACOG, 2015).

To be certified as a PCMH, screening for depression using a validated, standardized tool is required. Two common depression screening tools are the Patient Health Questionnaire-2 (PHQ-2) and the Patient Health Questionnaire-9 (PHQ-9). The PHQ-2 screens for depression risk and has 97% sensitivity and 67% specificity among adults (Maurer, 2012). The PHQ-2 consists of two simple questions which assess patient anhedonia and mood over the past two weeks (Kroenke, Spitzer, & Williams, 2003). Scores range from zero to six, with a score of three or greater being considered "positive", and indicates a depression risk requiring further evaluation using the PHQ-9. "The nine question screener scores range from 0-27. A score of 1-4 suggests minimal depression, 5-9 mild depression, 10-14 moderate depression, 15-19 moderately severe depression and 20-27 suggests severe depression" (Avalos, Raine-Bennett, Chen, Adams, & Flanagan, 2016, p. 3). The PHQ-9 can detect depression among women in both obstetrical (OB) and primary care settings, and has high sensitivity (88%) and specificity (88%) for identifying depression risk (Sit & Wisner, 2009). A positive PHQ-9 recommends provider follow-up for confirmation.

The purpose of this quality improvement initiative was to obtain baseline data regarding the rate of depression screening among female adult patients receiving women's health care within a Midwestern public health department seeking PCMH

recognition. The public health department did not have a depression screening process in place prior to this project. The questions for this pilot to introduce a depression screening tool were:

In female patients aged 18-60 years receiving women's health care within a Midwestern public health department:

1. What was the rate of PHQ-2 depression screening?

2. When the PHQ-2 indicated depression risk, what was the rate of PHQ-9 screening?

3. Of those patients identified at risk for depression, what was the rate of treatment (e.g. medication and/or referral)?

Review of the Literature

Search engines used included Medline, EBSCO HOST, PubMed, Cochrane, Science Direct, and the Cumulative Index to Nursing and Allied Health Literature (CINAHL). The keywords were: depression screening tools, PHQ-2, PHQ-9, depression, perinatal depression, pregnant women, and postpartum women. Publications were selected from 2013 to 2017, except one which was selected from an expanded search from 2007 to 2017. Inclusion criteria were limited to adult patients, PHQ depression screenings, and PCMH. Exclusion criteria were studies greater than 10-years old, involving only adolescent or geriatric patients, other depression screens exclusively, and screening tools for other mental health conditions.

Avalos et al. (2016) studied the PHQ-9 as the screening tool of choice in the perinatal population, demonstrating improved depression identification, treatment, and outcomes. They studied nearly 100,000 pregnant women over three phases (before,

during, and after PHQ-9 implementation) and found depression screening improved from less than 1% (before) to 98% (after). Moreover, new depression diagnoses increased from 8% to 12% (Avalos et al., 2016). Further, Avalos et al. (2016) reported the PHQ-9 holds "scientific validity and feasibility for a large-scale population-based screening program" (p. 3) including OB, family medicine, and behavioral health indicating universal use.

For OB patients in various settings, screening for depression may improve depression outcomes. Sit and Wisner (2009) reviewed two cohorts of patients who were screened with the PHQ-9, finding 85% of university clinic patients and 54% of private practice patients who screened positive for depression risk (Sit & Wisner, 2009). All who identified positive for depression risk received follow up with a social worker. Recommendations from this study were routine depression screening and referrals to behavioral health improve collaboration between providers which may improve depression outcomes in OB patients (Sit & Wisner, 2009).

Practice guidelines for depression screening and use of a validated screening tool may promote optimal patient outcomes. O'Connor, Rossom, Henninger, Groom, and Burda (2016) studied outcomes related to depression screenings. The sample included pregnant and postpartum women aged 18-years and older. Results included six trials (n = 11,869) and demonstrated 2.1% to 9.1% in absolute reductions for depression at follow-up (3-5 months) in programs which utilized depression screening versus those which did not (O'Connor et al., 2016). For those who participated in programs with depression screenings, a lower risk for depression than those who did not participate in programs utilizing depression screenings was demonstrated (O'Connor et al., 2016). Findings

suggested screening for perinatal depression facilitated early treatment and reduced depression or depressive symptoms among women.

Using a depression screening tool can identify the need to further assess for depression, but follow-up on a positive screen is important. Fuchs et al. (2015) conducted a review of physician follow-up after a positive PHQ-2 screen, if the PHQ-9 was administered, and if treatment changes were made. Of 1,744 patients, 24% (n = 418) had a positive PHQ-2 screen, and a majority (21%) of these patients had a chief complaint of mental health concerns (Fuchs et al., 2015). Of the patients who had a positive PHQ-2 screening, only 5% (n = 21) were given the PHQ-9 (Fuchs et al., 2015). Physicians cited time constraints and job demands as reasons for not administering the PHQ-9, hence they used their own judgment and the PHQ-2 score to guide treatment (Fuchs et al., 2015). Despite the recommendation of performing a PHQ-9, if a positive PHQ-2 was assessed, the majority screen-positive patients in this study were treated (or not) based on the physicians' decision after the PHQ-2 only.

Depression screening may be useful for identifying its risk, but it is only effective if a positive screen results in further evaluation and changes in care (if necessary). Furthermore, system changes such as incorporating the screening tool into the electronic health record (EHR), may be required to integrate depression screening practices into care. Lastly, best practice includes incorporating behavioral health services for further evaluation and treatment if screenings indicate a risk for depression (Fuchs et al., 2015).

The Plan-Do-Study-Act (PDSA) quality improvement method is a scientific method used to test change. The PDSA helps provide a foundation, guide a project, and establish boundaries for testing change. This method is well reviewed within health care

quality improvement initiatives. Taylor et al. (2013) discussed the application of the PDSA method to improve quality in healthcare. The 'plan' stage of the cycle helps identify the change that is needed and determine appropriate interventions. During the 'plan' stage, gaps in the process are identified. Once an intervention is planned, the cycle moves to the 'do' stage. During this stage, the intervention is to implement the plan. During the next step of the cycle, the effects of the intervention are evaluated or 'studied'. Last, the 'act' step of the cycle examines any further changes necessary to continually improve the process (Taylor et al., 2013).

Methods

Design.

This was a quality improvement initiative utilizing a descriptive, observational design. A retrospective medical record review was used to assess the rate of depression screening using the PHQ-2 and PHQ-9. In addition, any treatment (including referrals) in female adult patients receiving care in the women's health care primary care clinics from February 15 to March 31, 2018 was recorded.

Setting.

The setting was a Midwestern suburban public health department serving approximately one million residents. There were 41,000 visits in 2016. Included within this department were three free-standing clinics located in healthcare provider shortage areas (HPSA) serving racially, ethnically, and economically diverse patients throughout the county. Services include women's health, pediatrics, family medicine, and dental care.

Sample.

A convenience sample of patients who sought care at the women's health clinics within the public health department system from February 15 to March 31, 2018 was obtained. Inclusion criteria were: female patients aged 18-60 years receiving women's health care within the public health department. Visit types included annual exam, follow-up, obstetrics, and postpartum appointment, or if the chief complaint was a mental health concern. Visits for episodic care were included if the patient had not been screened for depression in over a year. Exclusion criteria included patients less than 18 or greater than 60-years of age, male gender, new prenatal workups, emergent visits, and scheduled procedures.

Approval Process.

The project was approved by the public health department's internal review committee. In addition, institutional review board (IRB) approval was obtained from the University of Missouri-St. Louis. There were no known risks or ethical considerations related to this study.

Data Collection and Analysis.

Data was collected via retrospective medical record review. Data was collected by the public health department's informational technology (IT) specialists who produced bi-weekly reports. Demographic data included age, gender, race, and payor status. In addition, type of visit, type of depression screening, and any recommended treatments or referrals was collected. If a PHQ-9 screening was positive for depression, the principal investigator accessed the EHR to determine if any follow-up was recommended. Data was stored on a password-protected computer by the principal investigator. All data was de-identified and study participants were coded as A1, A2, A3, etc. Descriptive statistics

were used to describe the sample population. Linear regression analyses were calculated to determine the predictability between positive PHQ-2 and PHQ-9 screenings, and between positive screenings and treatment and/or referral.

Procedures.

A quality improvement team was formed and included the medical director, the public health nurse, the manager of IT operations, and the manager of behavioral health. The team communicated by both face-to-face meetings and via email to discuss progress, recommendations, and to offer guidance throughout the process. Staff was educated about PCMH and achieving certification, the significance of depression screening, the PHQ-2 and PHQ-9 screening tools, as well as the follow-up steps including medication management, treatment, and/or referral. Resources included adding the PHQ-9 screening tool into the EHR, as well as revising the documentation process for the depression screenings.

Results

The total number of visits was 417 (n = 417). The average age was 31.07 (SD = 9.78). The category of gender was female (n = 417, 100%). The race most frequently observed was African-American (n = 319, 76%). The most frequent payor status observed was Medicaid (n = 75, 17.99%) as described in Appendix A. The most commonly observed type of visit was OB follow-up (n = 155, 37%). A Pareto chart describing patient appointment types is included in Appendix B.

The PHQ-2 depression screening rate was 32.61% (n = 136). Of those patients screened for depression, most had a negative PHQ-2 (n = 127, 93.38%). The next most frequent category for PHQ-2 was not done (n = 5, 3.68%) followed by a positive screen

(n = 4, 2.95%). The PHQ-9 depression screening rate was 5.92% (n = 8). Lastly, the treatment rate was 2.95% (n = 4) and included social work referral (n = 2, 1.47%) and provider counseling (n = 2, 1.47%). Those who were positively screened but not addressed for further treatment or referral was 3.68% (n = 5).

A simple linear regression analysis demonstrated a significant relationship between positive PHQ-2 screenings and PHQ-9 screenings done, $F(1,415) = 157.34$, $p < .001$, $R^2 = 0.27$. Approximately 27% of the variance in PHQ-9 screenings was attributable to positive PHQ-2 screenings. Therefore, it was found that positive PHQ-2 screenings significantly predicted the occurrence of PHQ-9 screenings ($B = 0.74$, $p < .001$) (Appendix C).

A multiple regression analysis was calculated to predict the relationship between positive PHQ-2 and PHQ-9 screenings and treatment. The results of the regression analysis indicated that the two predictors, positive PHQ-2 and PHQ-9 screenings, explained 58% of the variance for treatment, $F(2,414) = 289.44$, $p < .001$, $R^2 = 0.58$. Positive PHQ-2 ($B = 0.65$, $p < .001$) and PHQ-9 screenings ($B = 0.13$, $p < .001$) significantly predicted rates of treatment (Appendix D).

Rates were calculated between number of visits made and depression screening at each clinic within the study period. Clinic one had the most visits of the three, with a total of 188 visits made. Of these visits only seven were screened which was a 0.04% screening rate. Clinic two had 139 visits and 99 screenings done which was a screening rate of 71.22%. Clinic three had 90 visits and 23 screenings done, which resulted in a screening rate of 25.56%.

Discussion

The PHQ-2 depression screening rate for this pilot study was 32.61% (n = 136). The majority of PHQ-2 depression screenings were negative at a rate of 93.38% (n = 127). Four of these visits (2.95%) had a positive PHQ-2 screening, and one of these did not receive a reflex to the PHQ-9. However, five patients were screened directly with the PHQ-9 (as is appropriate when the patient has a history of depression) which brought the total PHQ-9 screening rate to 5.92%. The relationship between positive PHQ-2 screenings done and PHQ-9 screenings was found to be significant ($p < .001$), meaning that as PHQ-2 screenings increase, the rate of PHQ-9 screenings tend to increase as well. However, this result should be viewed cautiously due to the risk of statistical error based on its small sample size.

Four patients who received either a positive PHQ-2 or PHQ-9 screening received treatment: Social work referral or provider counseling on plan of care (a rate of 2.95%), a relationship that was significant ($p < .001$), but is also subject to the possibility of statistical error based on its small sample size. Five patients who screened positive did not have a treatment plan addressed in the provider's note. The overall treatment rate may have been improved if the providers had documented a plan of care. Without proper documentation there is lack of evidence regarding discussion about depression with the patient and/or a treatment plan. Findings are supportive of current research suggesting screening with a validated depression screening tool may increase depression identification and treatment, but provider follow-up is a necessary part of the process (Fuchs et al., 2015).

A Pareto chart is a quality improvement tool which can be utilized to understand the frequency of causes in a process (American Society for Quality [ASQ], 2018). A Pareto chart was created to assess appointment types to identify potential areas for improvement. Data showed that OB follow-up was the most frequent type of visit made. These findings indicate that an increased focus on screening OB follow-up appointments for depression could result in an overall increase in depression screening rates. Recommendations include reviewing with staff the importance of depression screening at least once during each pregnancy.

The most successful depression screening rates occurred with use of the PHQ-2 tool. The success of this tool may have been due to its relative simplicity and short time to administer. Limitations were that providers were not consistent with follow-up on positive depression screenings. Also, when a PHQ-2 screening was positive, reflex to the PHQ-9 did not occur in one patient. Furthermore, it was noted that a few OB patients received weekly screenings within the study period, despite the screenings being negative. Current recommendations support screening once in the prenatal period. In one case, a patient received five screenings weekly during the study period (all were negative). Although this isn't harmful to the patient, it is unnecessary and adds to staff workload. Lastly, upon chart review it was noted that five patients (of which four screened negative) had a known history of depression but received a PHQ-2 when the PHQ-9 should have been administered initially. The PHQ-9 assesses depression severity over time, something which the PHQ-2 was not designed to do (Maurer, 2012).

Clinic screening rates varied significantly between the three practice sites. Clinic one had the most screenings but the lowest rate, less than 1%. Targeted education about

depression screening at this location was given by the manager of behavioral health. Clinic two had the next highest number of visits and the screening rate was over 70%, while clinic three had a screening rate of about 25%. Screening rates may have varied based on individual factors at each clinic such as location, available resources, as well as staff buy-in regarding the importance of depression screening. A recommendation for future study is to determine the reasons for such variability between locations, which would be valuable when educating staff about future PCMH practice changes.

Finally, overall screening rates may have been affected by provider staff meeting attendance. Women's health providers attended a monthly staff meeting focused on their specialty, and were unable to attend staff meetings with other clinic providers held at the same time. Women's health providers may have missed important educational pieces regarding the PHQ-2 and PHQ-9 depression screening process. Recommendations were made to review proper screening and follow-up with women's health providers and staff at their monthly staff meetings to improve the depression screening process.

Conclusion

Prior to implementing the PHQ-2 and PHQ-9 depression screening process, the public health department had no formal method of depression screening and follow-up among women's health patients. The public health department has implemented a validated depression screening tool in their women's health clinic to identify women for depression risk. By implementing a depression screening process, women were identified for depression risk who may otherwise not have been identified. Also, the public health department is better prepared to meet the requirements necessary to achieve future PCMH recognition. Recommendations support the continued use of a validated

depression screening tool, however proper use of the tools, documentation, and follow-up is necessary. Future study should focus on the importance of follow-up on positive depression screenings, with proper support systems in place to ensure optimal patient outcomes.

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Appendix A

Table 1

Demographics

Variable	*n*	*%*
Gender		
Female	417	100
Race		
African American	319	76.50
Asian	3	0.72
Other	5	1.20
White	90	21.58
Type of Visit		
Annual	81	19.42
Follow-up	75	17.99
Initial OB	32	7.67
New patient	58	13.91
OB follow-up	155	37.17
Postpartum	16	3.84
Payor Status		
Aetna PPO	2	0.48
Anthem Blue Cross Blue Shield	11	2.64

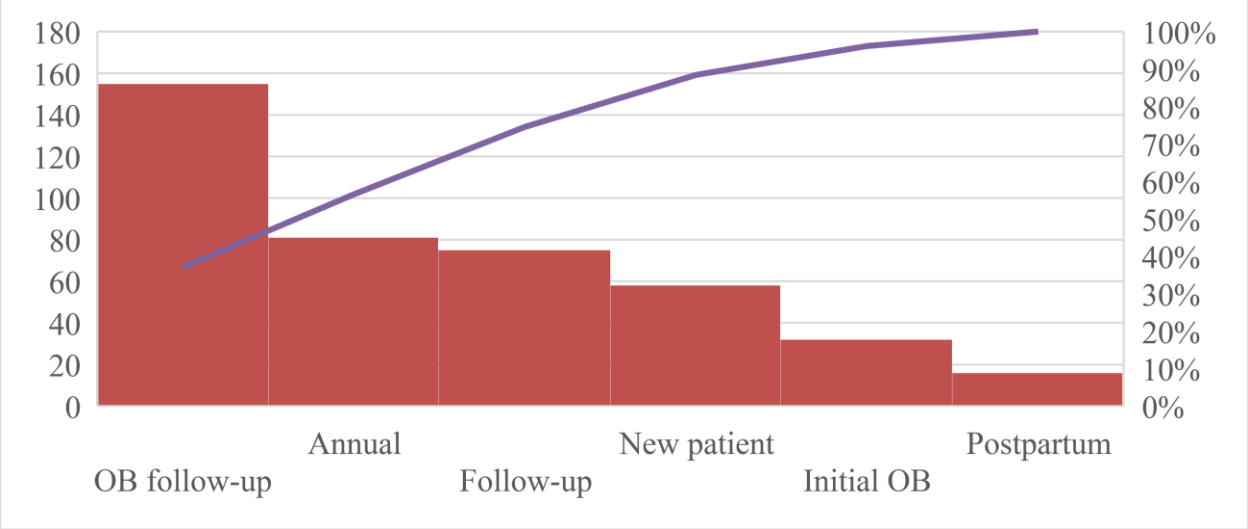
Variable	*n*	*%*
Carelink by Coventry	1	0.24
Cigna Healthcare	19	4.56
Core Function DOH	2	0.48
Gateway to Better Health	63	15.11
Home State Health Plan	67	16.07
Medicaid	75	17.99
Medicare	10	2.40
Missouri Care MC Plus Plan	67	16.07
United Healthcare	73	17.51
Missing	27	6.47

Note. Due to rounding errors, percentages may not equal 100%.

Appendix B

Figure 1

Pareto Chart of Type of Visit



Appendix C

Table 2

Results for Linear Regression with Positive PHQ-2 Screening predicting PHQ-9 Screening

Variable	*B*	*SE*	95% CI	β	*t*	*p*
(Intercept)	0.01	0.01	[0.00, 0.02]	0.00	2.10	.036
Positive PHQ-2 Screening	0.74	0.06	[0.62, 0.85]	0.52	12.54	< .001

Note. Results: $F(1,415) = 157.34$, $p < .001$, $R^2 = 0.27$

Unstandardized Regression Equation: PHQ-9 Screening = 0.01 + 0.74*Positive PHQ-2 Screening

Appendix D

Table 3

Results for Linear Regression with Positive PHQ-2 Screening and PHQ-9 Screening predicting Treatment

Variable	*B*	*SE*	95% CI	β	*t*	*p*
(Intercept)	0.00	0.00	[-0.01, 0.01]	0.00	0.27	.785
Positive PHQ-2 Screening	0.65	0.04	[0.58, 0.73]	0.65	17.49	< .001
PHQ-9 Screening	0.13	0.03	[0.08, 0.18]	0.18	4.90	< .001

Note. Results: $F(2,414) = 289.44$, $p < .001$, $R^2 = 0.58$

Unstandardized Regression Equation: Treatment = 0.00 + 0.65*Positive PHQ-2 Screening + 0.13*PHQ-9 Screening