Now What? Effects of On-Site Assessment on Treatment Entry After Perinatal Depression Screening

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Abstract

Background: Depression is a frequent accompaniment of the perinatal period. Although screening improves detection of perinatal depression, it does not in itself improve mental health treatment entry and, therefore, does not improve outcomes. This study addresses the feasibility of incorporating diagnostic assessment for depression directly into perinatal care visits and the influence of doing so on entry into mental health treatment.

Methods: The Perinatal Depression Management Program was implemented in an urban community health center serving a predominantly Hispanic population. The Patient Health Questionnaire (PHQ-9) was administered during perinatal visits. Positive screens (scores ≥ 10) were followed within the same visit by brief diagnostic assessment and engagement strategies. Chart review was conducted to compare rates of screening, assessment, and treatment entry during a 3-month baseline period before implementation of the intervention ($n=141$) with a 1-year period after implementation of the intervention ($n=400$).

Results: Before the intervention, 65.2% of patients completed a PHQ-9, and 10% of patients with positive screens received on-site assessment. None of the patients with identified perinatal depression entered treatment. After model implementation, significantly more (93.5%) completed a PHQ-9, and of patients with positive screens, 84.8% received an on-site assessment. Among patients diagnosed with major depression and offered treatment, 90% entered treatment.

Conclusions: It is feasible to implement diagnostic assessment for depression within perinatal clinic visits. Doing so may substantially increase entry into mental health treatment for women with perinatal major depression while reducing unnecessary mental health referral of patients with false positive screens.

Introduction

DEPRESSION IS ONE OF THE MOST FREQUENT accompaniments of the perinatal period, with an estimated period prevalence of 9.4%–12.7% during pregnancy and up to 21.9% during the first year postpartum.¹ The maternal and fetal risks of untreated depression during pregnancy can be substantial, including an increased risk of preterm labor^{2,3} and reduced birth weight.⁴ Offspring born to women with untreated antenatal depression may experience poorer growth, increased risk of infection, altered stress response, and more difficult temperaments.^{5, 6} Untreated maternal postpartum depression can adversely affect mother-infant interactions⁷ and increase the risk of emotional, cognitive, and behavioral problems in offspring.⁸

Despite its high prevalence, the risks of untreated symptoms, and opportunities for contact with healthcare pro-

viders, depression is grossly underdetected during routine perinatal care.^{9,10} Screening women during perinatal care with a validated tool, such as the Edinburgh Postnatal Depression Scale (EPDS),¹¹ substantially improves detection. For example, in a study of pregnant women, clinicians recognized depression in only 26% of women who screened positive on the EPDS.¹⁰ Postpartum, routine clinical evaluation identified 6.3% of a study population as having depressive symptoms, whereas 35.4% screened positive for depressive symptoms with the EPDS, a clinically and statistically significant difference.⁹ Studies such as these have led to widespread policy initiatives to promote universal perinatal depression screening. Thirty-eight states in the United States have launched perinatal depression screening initiatives, and five have passed legislation related to perinatal depression screening.¹² The American College of

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Obstetricians and Gynecologists (ACOG) strongly recommends perinatal depression screening.¹³

Unfortunately, many screening initiatives to date have had disappointing results. Perinatal depression screening has not been demonstrated to increase treatment use or improve clinical outcomes.^{14,15} Examination of the reasons for this suggests that the problem does not lie with screening *per se* but with what happens after a woman screens positive. In most models studied to date, women who screen positive are referred to mental health professionals for diagnostic assessment. Even when logistical obstacles are minimized, relatively few women accept or follow through with such referrals. For example, in a study of 400 pregnant women,¹⁶ 92.5% completed the EPDS; of the 49 women who screened positive, only 30.6% agreed to mental health assessment. Of those, less than half followed through with assessment, and only 2 women accepted any form of treatment. Similarly, in a large-scale community-based postpartum depression screening initiative with 5169 participants,¹⁷ 674 women (13%) screened positive on the EPDS, but only 185 of those (27.4%) agreed to a diagnostic assessment.

Data suggest that many women may be open to discussing depression with their perinatal care providers, in contrast to the widespread reluctance to see mental health providers for postscreening assessment. For example, in one study, 82.4% of pregnant women who screened positive for depression said they would be willing to discuss emotional issues with their obstetricians, although only 29.4% had done so.¹⁸ However, obstetricians cite time constraints, lack of training, and lack of relevant knowledge as key obstacles to incorporating depression assessments into perinatal care.¹⁹

In general medical settings, rates of treatment entry for patients with depression have been substantially improved by collaborative care models that integrate diagnostic assessment and treatment for depression directly into primary care.²⁰ A meta-analysis of 37 randomized trials of collaborative care models in general medical settings found that they significantly improved short-term and long-term clinical outcomes compared to treatment as usual for depression.²¹ To date, similar integrative models have not been fully implemented and tested in perinatal care settings. A pilot study adapting an integrative model to a perinatal care setting in an urban community health clinic found that with effective training, attention to work flow processes, and available consultation, it was feasible for perinatal care providers to conduct diagnostic assessments for depression during perinatal care visits and that acceptance of assessment by patients was very high in this context.²²

The current study aims to replicate this finding in a different urban community health center and to examine the effect of incorporating depression assessment into perinatal visits on patient's entry into treatment. Specifically, the study aims to answer the following questions:

1. Is it feasible to incorporate diagnostic assessments for depression directly into perinatal care visits for women who screen positive for depression?
2. Does incorporating depression assessment directly into perinatal care visits improve entry into mental health treatment for women diagnosed with major depression?

The study protocol was approved by the Institutional Review Board of the University of Illinois at Chicago.

Materials and Methods

Study setting and participants

The study took place at PCC Salud Family Health Center (PCC Salud), a federally qualified health center that is part of the PCC Community Wellness Center network of 10 health centers within Cook County, Illinois. PCC's mission is to improve health outcomes for the medically underserved communities of Chicago's west side. The network specializes in maternal and child healthcare, serving over 10,000 women of reproductive age (15–44) annually and providing perinatal care to approximately 2,500 women per year. The patient population served by PCC Salud is 78% Hispanic, 13% African American, 3% Caucasian, and 5% other (including biracial or no race/ethnicity listed). Approximately 15% of the patient encounters are for perinatal care, which is delivered by family physicians and certified nurse midwives. Study participants ($n=400$) were all women who received perinatal care at PCC Salud and delivered their babies within the study period (December 1, 2008–December 1, 2009). These were compared to a preintervention sample ($n=141$) of all women who received prenatal care at PCC Salud and delivered their babies within the baseline period (August 2008–November 2008).

Screening

Prior to study initiation, as part of routine perinatal care at PCC Salud, the 9-item Patient Health Questionnaire (PHQ-9) was administered at the first prenatal visit, during a prenatal visit between 24 and 28 weeks gestational age, and at the first postpartum visit 3–8 weeks after delivery. The PHQ-9 is a self-report questionnaire that has been widely validated for use in primary care settings.^{23,24} With a cutoff score of ≥ 10 (out of a maximum score of 27), its sensitivity is 74%–88%, and its specificity is 88%–91%.^{23,25} In populations of pregnant and postpartum women, its predictive value, sensitivity, and specificity are comparable to those of the widely validated EPDS.²⁶ It is often used preferentially in clinic settings that, like PCC Salud, serve both perinatal and primary care patients.²⁷ The PHQ-9 is being used increasingly in research studies with pregnant women.^{28–30} Because its items are derived from DSM-IV diagnostic criteria, it facilitates rapid diagnostic assessment and was, therefore, well suited to the current study.

The preexisting clinic screening protocol was not changed for this study. The clinical protocol was for medical assistants to explain the PHQ-9 to patients, answer patients' questions about the screening tool and process, and ask them to complete the screen in the examination room before seeing their obstetric providers. Screens were scored by providers during perinatal visits. For this study, although these screening-specific processes remained unchanged, clinicwide screening rates were tracked via chart review and compared during a 3-month preintervention baseline period and a 1-year intervention period to ascertain potential effects on screening rates of embedding the screening process within a new model. Both preintervention and postintervention, participants were counted as having received screening based on chart documentation of a screening score during a perinatal visit. Only the first perinatal depression screen was included in this study for women who were screened more than once.

Assessment, engagement, and treatment entry

Before the intervention, PCC Salud practiced a screen and refer model in which patients with positive screens (those with a score ≥ 10) were referred to on-site behavioral health specialists for assessment. For this study, a change was made in this practice. Perinatal care providers were trained to conduct brief diagnostic assessments during perinatal care visits for patients with positive screens. These included reviewing PHQ-9 responses with patients and ruling out false positives by ascertaining whether any positive responses were related to normal pregnancy-linked somatic changes or normal, transient responses to environmental stressors. For patients diagnosed with major depression, providers followed up with a brief screen for bipolar disorder. For patients endorsing suicidal thoughts, providers conducted a brief suicide assessment.

Providers were also trained to incorporate treatment engagement strategies into the assessment process. These included:

- Explaining the diagnosis in culturally congruent, easy to understand language.
- Explaining treatment options and recommendations.
- Eliciting and addressing patients' reactions, concerns, and treatment preferences.
- Delivering and explaining self-care kits.
- Introducing an on-site behavioral health specialist (social worker) as a consultant to the patient; these introductions occurred in person during the session whenever possible, but when unavailable during the visit, the behavioral health specialist would call the patient later.

During the intervention phase, positive screens were followed immediately, within the same perinatal visit, by these brief assessment and engagement strategies. The assessment process took 5–7 minutes, depending on the complexity of the patient's presentation. Documentation was facilitated by a checklist form, with dispositional options listed that linked PHQ-9 scores and diagnoses to an appropriate level and type of intervention.

For the preintervention baseline, patients were counted as having received on-site assessment based on chart documentation of assessment by a behavioral health specialist anytime after a positive screen. Postintervention, patients were counted as having received on-site assessment based on chart documentation of assessment and diagnostic impres-

sion by a perinatal care provider during a perinatal visit. The *a priori* functional definition of whether implementing and sustaining on-site assessment would be considered feasible was that at least 80% of women who screened positive would have a documented on-site assessment during the study period. Treatment entry was defined, both before and after intervention, as at least one chart-documented visit with a mental health clinician after a diagnostic assessment.

Treatment

The current study focuses on treatment entry rather than treatment outcomes but is part of a larger project, the Perinatal Depression Management Program (PDMP), that includes a specific integrated treatment model and is designed to study outcomes. The treatment model is described here for context, as the assessment process was embedded within this larger model. The intervention adapts principles shown to be effective in models integrating mental healthcare with primary care, including stepped care, collaborative care, colocation, provider support, and algorithmic support.

Stepped care. Stepped care models match the severity and complexity of patients' disorders to the appropriate level of care. Table 1 shows the stepped care guidelines used for the larger project of which the current study is a part. These are flexible guidelines, modifiable for individual patients based on clinician judgment and patient preference.

Collaborative care. Collaborative care models systematically integrate multidisciplinary teams of healthcare providers, each with a designated role and with the patient as an integral part of the team. The PDMP treatment team included family physicians, certified nurse midwives, behavioral health social workers, health educators, case managers, nurse practitioners, and psychiatrists, each with designated roles and communication pathways. The patient's role was reinforced by health education, personalized goal setting, self-care kits, and PCC Salud's culture of patient-centered care.

Integrated colocation. In the PDMP, mental healthcare was provided on-site as part of perinatal care. Psychopharmacology, when indicated, was provided by trained midwives and family physicians. Psychotherapy, when indicated, was provided by trained on-site social workers. Self-care kits were offered and explained during perinatal visits. Referral

TABLE 1. STEPPED CARE IN THE PERINATAL DEPRESSION MANAGEMENT PROGRAM

Steps	Patients	Recommended intervention
Step 1	Subsyndromal depressive symptoms (minor depression)	Cognitive-behavioral therapy (CBT)-based self-care kit
Step 2	Mild major depression	Guided self-care (self-care kit with guidance by a behavioral health specialist or health educator)
Step 3	Moderate major depression	Antidepressant medication prescribed by perinatal care provider Self-care kit
Step 4	Severe major depression or positive screen for bipolar disorder or both	Antidepressant medication prescribed by perinatal care provider CBT on site with a social worker Antidepressant medication prescribed off-site by a psychiatrist or psychiatric nurse practitioner CBT on site with a social worker

outside the clinic to psychiatrists or psychiatric nurse practitioners was available for patients with severe, complex, or treatment refractory disorders.

Provider support. A university-based multidisciplinary team of women's mental health professionals provided training and ongoing consultation to the community health providers who delivered on-site mental healthcare. The team also maintained and regularly updated a chart summarizing evidence-based information about risks and benefits of specific antidepressant medications during pregnancy and lactation. Monthly meetings were held with provider representatives and the leadership team to review quantitative data and qualitative experiences of the model, identify obstacles, and propose solutions to problems.

Algorithmic support. A systems algorithm guided work flow and information flow, specifying when to screen, how to stratify patients to stepped interventions, and when to track outcomes. Clinicians could alter algorithmic recommendations for individual patients based on clinical judgment and patient preference.

Provider engagement, training, and work flow

A key obstacle in engaging providers to participate in on-site assessment models is the fear that such models add extra work to already overburdened schedules. This project employed specific strategies to engage and train providers, with focused attention to streamlining work flow, as follows:

- The stepped care model was explicitly introduced as a quality improvement project within a culture of quality improvement. Providers were aware that they were already seeing many patients with perinatal depression and that undiagnosed, undertreated depression could be time consuming and frustrating as well as risky. From a quality improvement framework, providers viewed this model as an opportunity to improve the effectiveness and efficiency of depression diagnosis and care.
- A multidisciplinary team collaboratively designed the assessment tool and documentation with careful attention to accuracy and efficiency. Assessment forms contained brief reminder instructions and were readily available in charts. Documentation was integrated with the tools in checkbox format.
- Provider training took place in three phases. Phase 1 consisted of overviews about perinatal depression to large groups. Phase 2 consisted of focused presentations to smaller groups, including skills training workshops. Phase 3 consisted of ongoing clinic-level training on specific topics in provider meetings.
- A designated on-site physician champion reinforced trainings, consulted with peers, and gave feedback to peers based on chart review.
- The collaborative care approach included warm hand-offs from perinatal providers to on-site social workers once a diagnosis was made.
- Monthly iterative feedback about performance allowed for continuous improvement of the model based on clinicwide data and provider experience. A Performance Improvement Assistant entered data, produced reports, and helped implement systems change.

Statistical analysis

Chi-square analyses were conducted to examine differences in the frequencies of screening, assessment, and diagnosis of depression during the preintervention and postintervention periods. Fisher's exact test was used when sample sizes within contingency tables were too small ($n < 5$). All p values are two-sided, and the statistical significance level was set at $p < 0.05$. Using the Clopper-Pearson method,³¹ confidence limits were constructed around the proportions observed in the post-intervention group percentages to determine if preintervention group percentages were outside of those limits. All analyses were performed using IBM SPSS (version 19). For one category (number of women entering treatment), no statistics could be computed because the baseline rate was zero.

Results

Table 2 compares screening, assessment, and treatment entry during a 3-month preintervention baseline period and a 1-year postintervention period. During the preintervention baseline phase, PCC Salud's experience mirrored that of many other clinics with a commitment to improving detection and treatment of perinatal depression. With an intent to implement universal depression screening during perinatal visits, 65.2% of eligible women completed at least one PHQ-9 screen. Among those, 10.9% screened positive on their first screen, a rate congruent with the range reported in other studies. However, none of those women entered mental health treatment.

After introduction of the PDMP, the screening rate improved to 93.5% of women completing at least one screen, a significant improvement from baseline. On-site assessment by perinatal clinicians was documented in 84.8% of women who screened positive. This was a substantial and statistically significant improvement from the baseline rate of 10% and met the predetermined clinicwide goal of assessing at least 80% of women with positive screens.

Among the 33 women with positive PHQ-9 screens, clinicians assessed 16 of these to be caused by something other than major depressive disorder. These included bipolar disorder ($n=1$), somatic confounds of pregnancy ($n=2$), normative reaction to stress ($n=1$), combination of somatic confounds of pregnancy and normative stress reactions ($n=11$), and unknown ($n=1$). Treatment entry for women who were diagnosed with major depression went from 0% preintervention to 90% postintervention.

Discussion

This study confirms the findings of prior studies that screen and refer models, that is, screening for depression during perinatal visits and referring women with positive screens to mental health providers for assessment outside the visits, led to disappointingly low rates of entry into treatment. This study demonstrates that adding diagnostic assessment and engagement strategies during perinatal visits is feasible, in that this busy community health clinic serving a high-needs population was able to accomplish this for >80% of women who screened positive. It also demonstrates that adding on-site assessment and engagement strategies can substantially improve entry into mental health treatment. This is in accord with a prior study of stepped care treatment for women with

TABLE 2. ON-SITE ASSESSMENT OF DEPRESSION AND TREATMENT ENTRY IN A PERINATAL CARE SETTING

	Preintervention n (%)	Postintervention n (%)	Pre/post comparison		
			95% CI ^a	Chi-square	p
No. of women receiving perinatal care who delivered liveborn infants	141 (100)	400 (100)	-	-	-
Among those receiving perinatal care, no. (%) of unique patients completing a PHQ-9	92 (65.2)	374 (93.5)	90.6-95.7	69.68	<0.001
Among those screened, no. (%) with positive PHQ-9	10 (10.9)	33 (8.8)	6.2-12.2	0.37	0.55
Among those with positive PHQ-9, no. (%) assessed on site	1 (10.0)	28 (84.8)	68.1-94.9	19.58	<0.001
Among those assessed, no. (%) diagnosed with major depression	1 (100)	12 (42.9)	24.5-62.8	-	0.45 ^b
Among those with major depression, no. (%) offered treatment	0 (0.0)	10 (83.3)	51.6-97.9	-	0.23 ^b
Among those offered treatment, no. (%) entering treatment	0 (0.0)	9 (90.0)	55.5-99.8	^c	^c

^aClopper-Pearson estimation of 95% binomial confidence intervals (CI) for postintervention.

^bFishers exact test.

^cNo statistics could be computed because grouping is constant.

postpartum depression³², that demonstrated that stepped care significantly increased receipt of treatment.

It is notable that in this study, which employed the PHQ-9 as a depression screening tool, less than half of the women who screened positive were diagnosed by their perinatal clinicians as having major depression. This is similar to the findings of Gjerdingen et al.³³ that the percent of postpartum women screening positive on the PHQ-9 (score ≥ 10) was substantially higher than the percent diagnosed with major depression by the Structured Clinical Interview for Diagnosis (SCID). The authors of that study posited that some women may feel more comfortable disclosing symptoms on a questionnaire than in a face-to-face interview. That explanation is unlikely to apply to most of the women in the current study; their reported symptoms were generally concordant on the screening tool and in clinical interviews, but clinicians sometimes attributed causality to factors other than unipolar depression. In cases where clinicians suspected bipolar disorder or clinically significant adjustment disorder, patients were referred for mental health interventions anyway. This, too, accords with the findings of Gjerdingen et al. that women in their study with positive PHQ-9 scores often appeared to have clinically significant problems despite a negative SCID.

Another possible explanation is that the PHQ-9 may have less specificity for perinatal major depression than the EPDS. Prior studies comparing these instruments have had mixed results. Hanusa et al.³⁴ found that the EPDS was significantly more accurate than the PHQ-9 in identifying postpartum depression. In contrast, Flynn et al.²⁶ found that the EPDS and the PHQ-9 had comparable sensitivity and specificity when used in both pregnant and postpartum women, and Yawn et al.³⁵ found an 83% concordance between the two screening tools.

A third possibility is that our clinician training was insufficient, and clinicians were misclassifying cases of major depression. This could be tested in a future study by having psychiatrists perform concomitant structured interviews.

Conclusions

There is ample evidence that using validated screening tools substantially improves the detection of perinatal de-

pression as compared to usual clinical assessment. However, it has become clear that detection via screening does not in itself lead to better outcomes for depressed perinatal women. Prior studies have shown that a key reason for this is that most women who screen positive for perinatal depressive symptoms do not enter treatment. In cases of false positive screens, this might represent appropriate self-appraisal that treatment is not needed; in cases of true positive screens, this represents a substantial missed opportunity.

Many programs that have implemented and evaluated perinatal depression screening initiatives have used a screen and refer model, referring women who screen positive to mental health providers for diagnostic assessment. Comparing depression to other medical conditions may help shed light on the conceptual pitfalls of this approach. For example, what if women whose blood pressure readings were elevated on one occasion were handed cards referring them to cardiologists without their obstetricians making a diagnosis of hypertension or discussing treatment options? What if women with elevated urine glucose levels were referred directly to endocrinologists without first asking whether they ate breakfast before the test? We would likely predict a high number of false positives, lack of patient engagement in treatment, unnecessary medical costs, undue anxiety, and fragmentation of care. Indeed, studies of screen and refer models of depression screening have confirmed these anticipated results: they do not improve entry into treatment, they do not improve provider awareness that their patients have depression, and they do not reduce symptoms of depression. Computer simulation of screen and refer models also demonstrates that they are not cost-effective, largely because patients with false positive screenings are referred for mental health services and also because all patients are referred to specialists regardless of illness severity or complexity.³⁶

Many providers and healthcare systems recognize that incorporating assessment directly into perinatal care could potentially reduce false positives, increase opportunities to engage patients in treatment, improve care coordination, and reduce costs. However, it is a daunting prospect for under-resourced clinics to consider incorporating assessment of depression into perinatal care. This study has demonstrated that

with careful attention to provider training and support, work flow coordination, and multidisciplinary collaboration, it is feasible to incorporate routine diagnostic assessment for depression directly into perinatal care for women with positive scores on a depression screen. It has shown that doing so substantially increases treatment entry for women with major depression, compared to prior screen and refer models.

This study has several limitations that should be noted and that highlight the need for additional research. The study site did not include pediatricians, so the model does not address the effectiveness of postpartum maternal depression screening during pediatric visits. In addition, it is possible that some mental health treatment entry occurred that was not reflected in the medical records and, therefore, was not included in the study data. The finding that less than half of the women in this study who screened positive on the PHQ-9 were diagnosed by their perinatal clinicians as having major depression suggests the need for additional research to improve the efficacy of perinatal depression screening tools and assessment methodology. Until further research confirms the accuracy of brief diagnostic assessments conducted by trained perinatal clinicians, it would be premature to recommend this model for widespread adoption in clinical practice.

It is posited that by increasing entry into evidence-based treatment, outcomes will improve as well. It is also posited that by reducing mental health referrals for women with false positive screens and employing stepped care models that match resource use with level of clinical complexity, cost-effectiveness will improve. Further research is needed to confirm these hypotheses.

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The authors have no financial conflicts of interest to disclose.

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