Midwifery Detection, Evaluation, and Treatment of Perinatal Mood Disorder: A Quality Improvement Project

Emily Balaguer, BA, MS, BSN, RN

Oregon Health & Science University, School of Nursing

Jennifer A. Ham, DNP, CNM, NCMP

February 21st, 2024

Abstract

Background: Perinatal mood disorder (PMD) is the leading complication that arises during pregnancy and the postpartum period. In Oregon, rates of PMD are purportedly higher than they are nationally. Since the advent of the Covid-19 pandemic, rates of PMD have increased while the number of mental health providers and community resources dwindled. In 2023, practice guidelines were updated to include the new recommendation that pregnant patients should now be screened for an additional time during the third trimester. However, clinics are lagging behind these updated recommendations and as a result are struggling in their timely detection and treatment of PMD. **Aims:** To increase detection of PMD during the third trimester and improve provider comfortability with managing PMD in an ambulatory prenatal clinic in a suburb outside of Portland, Oregon. **Methods:** A practice toolkit was created that consisted of resources for providers to utilize to detect and manag PMD, local and free/ affordable/ Medicaid-covered mental health resources for patients, a new workflow to routinely screen patients for PMD between 30 and 34 weeks' gestational age and standardized documentation of screening scores in a standardized way, and printed reminders about using the new workflow in the office. **Results:** The percentage of patients screened for a second time during the third trimester increased from 14% (n=184) to 59% (n=64). A two-proportion Z-test was utilized to demonstrate this increase as being statistically significant. **Conclusion:** This project succeeded in facilitating a more than four-fold increase in third trimester PMD screening rates. Future directions of this project are needed to determine the quantity of patients being detected with PMD and implement additional workflows around successfully treating identified patients. The creation and maturation of this third trimester PMD screening system is a concrete and meaningful aspect of improving patient wellbeing and best practice in the ambulatory obstetric setting.

Table of Contents

Midwifery Detection, Evaluation, and Treatment of Perinatal Mood Disorder: A Quality Improvement Project

Problem Description

Perinatal Mood Disorder (PMD) is a broad category of mental health disturbances, including anxiety, insomnia, irritability, depression, and suicidal ideation that can arise for an estimated 20% of people during the pregnancy and postpartum periods (Anxiety and Depression Association of America [ADAA], 2023; McKee et al., 2020). Symptoms of PMD may surface at any point within two years from conception until a baby's first birthday. PMD can inhibit a person's ability to cope, bond with their baby, complete successful breastfeeding for the recommended first six months of life, maintain relationships, and function in their daily life (ADAA, 2023; Dagher et al., 2021). Moreover, people with a history of PMD are more likely to both experience PMD in subsequent pregnancies as well as develop long-term mood disorders later in life, including Major Depressive Disorder (MDD) (Dagher et al., 2021; Kroh & Lim, 2021). Concerningly, children of parents with untreated PMD are more likely to be born preterm and are predisposed to developing psychological internalizing problems in childhood (Tainaka et al., 2022). PMD is the leading complication that arises during the perinatal period nationally (ADAA, 2023). Its prevalence increased from 9.4% in 2010 to 19.3% in 2021, a relative increase of 105% (Getahun et al., 2023). Despite this, there are a number of obstacles that prevent the condition from being diagnosed and treated (McKee et al., 2020).

The obstacles that underlie this problem are multifaceted. While PMD has increased by nearly 50% since the advent of the COVID-19 pandemic and continues to be on the rise (McKee et al., 2020; Shuman et al., 2022), there is a concurrent growing national shortage of mental health providers and community resources (Mongelli et al., 2020). As more people are in need of support for PMD, mental health resources have dwindled, and the problem is further compounded by obstetric providers reporting uncertainty about their roles in both screening for

and treating PMD (Bayrampour et al., 2018). Interestingly, Bayrampour et al. (2018) found that the likelihood among obstetric providers to screen patients for PMD was positively associated with their number of years in practice, and many obstetric providers cited work experience as their sole training in mental health counseling and PMD management. This research result implies that, in the current post-COVID-19 climate, obstetric providers may feel less competent to treat PMD, given their lack of both experience in managing pandemic-related mental health concerns as well as formal psychiatric and mental health training. As a result, obstetric providers may be even less likely to screen for a condition that they neither feel comfortable managing nor have available community resources to which they can refer their patients (Bayrampour et al., 2018).

In Oregon, the rates of PMD are purportedly higher than national numbers, with one in four pregnant or postpartum patients reporting symptoms of PMD (Oregon Health Authority [OHA], 2023). That number has climbed dramatically since the start of the pandemic and continues to grow (OHA, 2023). In an Oregon Public Broadcasting (OPB) (2023) interview, Chris Bouneff, executive director of Oregon's chapter of the National Alliance on Mental Illness, stated that a combination of decisions made primarily by health insurance companies and state politicians controlling Oregon's Medicaid program have resulted in inadequate mental health treatment options in virtually every community in Oregon. It was further stated that the advent of the Covid-19 pandemic resulted in a mass exodus of mental health providers from the highly stressful, front-line profession of mental health care. This combination of regional problems has impacted countless local institutions, although local scale institutional data representing the severity of the problem is currently lacking. In a collaborative obstetric-midwifery healthcare institution located just outside the Portland metropolitan area, however, stakeholders have identified certain organization-specific obstacles including: irregular PMD screening processes both antenatally and postnatally, lack of a designated social worker for the organizational maternal-child department, insufficient screening tools for mental health comorbidities, absence

of psychiatric or behavioral health specialists employed within the outpatient setting, lack of mental health resources for Spanish-speaking patients, fragmented mental health resources provided by the institution, frequent fluctuations in resources offered through the state's Medicaid program, Oregon Health Plan (OHP), and long wait times for patient access within the limited mental health resources available.

The National Institute of Mental Health (NIMH) (2022) advocated for adequate screening protocols for behavioral and mood problems, the knowledge of robust, relevant mental health resources, and easeful referral processes to these resources by public organizations. Despite this advocacy, stakeholders in the local clinic have reported insufficiency in these areas at their institution. Specifically, local stakeholders have disclosed that PMD screening almost always happens during the first prenatal visit and then again during the postpartum period, but prenatal mood screening is unlikely to happen for a second time later in pregnancy.

Available Knowledge

While there are many varied approaches to managing PMD, the preliminary phase of PMD treatment involves early recognition of the problem. The American Psychiatric Association (APA) (2018) recommended screening for PMD once in early pregnancy, once in late pregnancy, and at both postpartum visits. For years, however, the American College of Obstetricians and Gynecologists (ACOG) only recommended screening once in pregnancy, at the first prenatal visit, and then again once during the postpartum period. This recommendation was recently updated, and ACOG (2023) now endorses screening twice in pregnancy: once in early gestation and once again at a later gestational age. The rationale behind this new recommendation is likely due to the fact that, as APA (2018) touched on, mood disturbances often arise during the third trimester as the transition into parenthood of a new baby becomes more imminent. When patients experience these third-trimester mood disturbances associated with the rapidly approaching due date, but are not screened again until their 6-week postpartum visit, their symptoms will not be detected until the condition becomes more severe. People who

are more severely affected may require more urgent and multifaceted care in the American healthcare context which is characterized by a shortage of mental health resources and long wait times.

Postpartum Support International (PSI) (2023) endorses the use of evidence-based, standardized screening tools, such as the Edinburgh Postnatal Depression Scale (EPDS). They recommend using the EPDS over other, more targeted validated screening tools for anxiety and depression, because the EPDS screens for a wider variety of PMD symptoms than any other tool. Levis et al. (2020) supported the use of 10/30 as a reasonable cutoff score for diagnosing PMD using the EPDS.

Additionally, the value of social workers in ambulatory obstetric clinics has been evidenced by numerous post-COVID-19 studies, which can be found on the National Association of Perinatal Social Workers (NAPSW) website. NAPSW (2023) explains that perinatal social workers are integral, because they help ameliorate the effects of psychosocial challenges and help their patients develop long-term, healthy and nurturing parent-child relationships.

Rationale

For any abnormally screened or inadequately managed condition, Thoele et al. (2020) highlighted the ways a practice toolkit, or a composition of appropriate documents and resources, can help facilitate increased adherence to evidence-based practice (EBP). In their descriptive case study, Thoele et al. (2020) lamented that, while most toolkits are composed solely of resources, many are insufficient in their supplementation of strategies for implementing interventions. In their study, it was found that successful toolkits included relevant community resources along with engagement with and training of stakeholders, the enactment of procedures for applying the toolkit in a variety of related contexts, and reimbursement for stakeholders as necessary.

As the gaps between evidenced-based practice and actual clinical practice grow, efforts have been made to identify the best ways to translate rapidly changing knowledge to providers. Yamada et al. (2015) completed a systematic review comparing the success of stand-alone interventions with multifaceted interventions, more commonly known as toolkits. While Yamada et al. (2015) indeed showed benefits attached to standalone interventions, such as printed educational materials, educational meetings, audit and feedback processes, and reminders, their work showcased the astounding merits of toolkits as opposed to stand-alone interventions. Toolkits, as Yamada et al. (2015) demonstrated, are superior to standalone interventions, because they utilize multifaceted knowledge-translation approaches, incorporating two or more individual tactics. As a result, toolkits yield far greater success when it comes to codifying knowledge, facilitating provider behavior change, and closing the gap between evidence-based practice and actual clinical practice (Yamada et al., 2015). Since Yamada et al.'s (2015) systematic review, the landscape of quality improvement in healthcare has favored the use of practice toolkits over any other tactic of knowledge translation (Thoele et al., 2020).

For the local obstetric-midwifery clinic, an evidence-based toolkit might consist of: (1) reminders in the clinic to screen for PMD at designated times, (2) regularly updated lists of therapists and psychiatrists accepting new clients in the area, (3) lists of group therapy programs designed for a variety of PMD presentations, (4) resources available in both English and Spanish, (5) community resources covered by Medicaid, (6) a defined workflow protocol and required electronic health record (EHR) checklist for screening perinatal patients at regular evidence-based intervals, (7) basic training for providers on how to effectively utilize resources in the toolkit, and (8) compensation to stakeholders for adopting the new workflow that may increase workload. As identified by stakeholders, however, the need for a social worker in their clinic persists. Compensation and support may be best supported by the addition of a social worker to their practice, whose role could in part entail keeping resources in the toolkit up to date and helping providers utilize the toolkit.

This project was designed drawing inspiration from Langley et al.'s (2009) Model for Improvement from the Improvement for the Institute of healthcare (IHI, 2020). As pointed out by Langley et al. (2009), the simplicity and efficacy of this model can lead to success in a wide variety of settings when executed correctly.

Specific Aims

The global goal of this project was for a collaborative obstetric and midwifery practice located just outside the Portland metropolitan area to improve detection, evaluation, and treatment of PMD. The specific goals are multifaceted and include (1) increasing their PMD screening rates over three months so that the majority of patients being seen during the third trimester received PMD screening, (2) creating a comprehensive, up-to-date list of local mental health resources, (3) increasing provider comfortability with managing PMD, and (4) creating a platform that will support continued quality improvement efforts led by future DNP students or midwifery practice team when it comes to PMD. A specific aim is that by December 9th, 2023, 75% of third trimester charts will show utilization of the new workflow bundle, as evidenced by documentation of EPDS scores in the EMR Epic flowsheet, and the number of providers in the clinic who indicated they either 'Agreed' or 'Strongly agreed' with the Likert-scale survey question increased by 30%.

Context

This project was implemented at a physician-midwife collaborative practice ambulatory clinic affiliated with a university in a suburb just outside Portland, Oregon. The practice provided care for roughly 360 pregnancies annually during the antepartum and postpartum periods prior to the start of this project. As reported by the current practice manager, the overall acuity status of the patient population was considered complex, as defined by the ACNM's Benchmarking Survey medical/ obstetrical risk categories. In terms of racial identitiy, as of 2022, 77.5% of patients identified as White, 5.8% identifed as Asian, 2.6% identified as Black, 1.4% identified as Indian American/ Alaskan Native, 0.5% identified as Pacific Islander, 0.08% identified as

Native Hawaiian, 9.7% of patients declined to disclose their racial identity, and 0.4% patients' racial identities were unknown. Ethnically, 26.3% of patients identified as Hispanic, 63.5% identified as non-Hispanic, 3.7% of patients declined to disclose their ethnic identity, and 0.4% of patients' ethnic identities were unknown. Data regarding the breakdown of pre-pregnancy Body Mass Index (BMI) among patients were unavailable. While half the patient population were covered under Medicaid Oregon Health Plan (OHP), the other half were covered under private insurers.

Several health disparities are present in PMD. Getahun et al. (2023) found that Black patients were the most likely to be diagnosed with PMD at 22%; White people made up the second most diagnosed group, at 21.8%; Hispanic people made up the third most diagnosed group, at 18.8%; people identifying as either Asian or Pacific Islander are least likely among these groups to be diagnosed, at 13.8%. Important to note is that the rate of PMD increased disproportionately among all non-White groups between 2010 and 2021 (Getahun et al., 2023). While the prevalence of diagnosed PMD among White people increased by 60% between 2010 and 2021, people identifying as Asian or Pacific Islander experienced a relative increase of 280%, Black people experienced a relative increase of 140%, and Hispanic people experienced a relative increase of 110% (Getahun et al., 2023). Elevated pre-pregnancy BMI, specifically obese and morbidly obese, was found to be another strong indicator of PMD across all racial and ethnic identities (Getahun et al., 2023). Patients whose obstetric care was covered by Medicaid were 52% more likely than those with private insurers to receive a PMD diagnosis (Steenland & Trivedi, 2023).

The practice was established in 2020, just after the onset of the COVID-19 pandemic, and during the initial period of operation, interim leadership was in effect while more permanent staffing could be found in the face of the healthcare worker shortage. Patients were cared for by both obstetricians and midwives, and patient condition drove which provider type predominantly cared for each patient. The clinic was staffed by 9 midwives, 9 obstetricians, 3 nurses, 4

medical assistants, and the clinic did not have a social worker. Additionally, office visits were routinely attended by midwifery students. Appointment times ranged from 40 minutes for new patients and 6-week routine postpartum visits to 20 minutes for returning prenatal patients and 2-week postpartum patients. Of these visits, during the month prior to this project, roughly 90% were held in person, and 10% were held virtually. According to one local stakeholder, the majority of virtual visits consisted of patients being seen at the 2-week postpartum interval, along with some occasional prenatal appointments deemed acceptable to be held virtually by the provider.

To screen for PMD, the clinic utilized the standardized and validated tool, EPDS. Despite evidence-based guidelines, only 14% of patients were screened a second time during the third trimester. Documentation of PMD screening during the month prior to this project was predominantly done so in the narrative of visit notes; such documentation was not recorded in a standardized way that could allow other providers mutually caring for a patient to quickly determine whether adequate PMD screening had been completed or not.

Interventions

The primary intervention of this project was to create a multi-faceted, dynamic PMD toolkit that would enhance screening, improve timely access to evaluation and treatment, and foster provider comfortability with caring for affected patients. While the clinic would likely benefit from improvements to the screening and management of PMD both antenatally and postnatally, this project isolated its efforts within the third trimester to bring providers in alignment with evidence-based guidelines, minimize workflow change, and improve chances for success. This decision was further supported by Khanlari et al.'s (2019) conclusion that antenatal distress is more likely to occur than postpartum depression. Taking Thoele et al.'s (2020) findings about successful toolkits into consideration, the toolkit implemented for this project included both appropriate documents and resources relevant to PMD as well as intervals to regularly seek feedback from stakeholders about integration of the toolkit.

Specifically, the toolkit consisted of (1) an increased variety of validated mental health screening questionnaires, (2) a comprehensive list of current, local, and free or OHP-covered mental health resources in both English and Spanish for providers to either consult with or reference and share with patents, (3) a new workflow in which every patient would be screened during the third trimester (narrowed down to between 30 and 34 weeks' gestation for optimized visit flow), (4) printed reminders in the clinic's provider office to screen for and document EPDS scores in the flowsheet for patients being seen between 30 and 34 weeks' gestation.

In order to encourage adoption of the new workflow, providers and MAs were briefed on the contents of the toolkit documents prior to the first PDSA cycle so they were familiar with their newly available resources. A hard copy of the documents was kept in a binder in the clinic office with a Table of Contents on its cover (Appendix A). Within the Table of Contents was a corresponding page number for physical copies of each document in the toolkit as well as a corresponding dot-phrase for electronic versions of each handout available to easily add to the After Visit Summary (AVS) in the EHR. An additional form, derived from the Table of Contents with the list of available resources, was developed to give to patients, along with the EPDS questionnaires they received between 30 and 34 weeks' gestation, so patients could quickly designate any resources they specifically desired either electronically or as a hard copy (Appendix B). This component of the workflow, in which access to PMD resources was entirely patient-driven, removed the responsibility of deciding which resources were appropriate for each patient from the providers.

This project spanned over the course of 10 weeks during the fall of 2023. Prior to the start of the project, an email was sent to the practice to brief stakeholders on the contents within the toolkit, review the new proposed workflow, and acquire baseline data about provider comfortability with PMD management utilizing Likert-scale surveys with a SurveyMonkey link. The project implementation period spanned from October 11th, 2023 until December 15th, 2023. During this time, four Plan-Do-Study-Act (PDSA) cycles were implemented, revolving

around regularly held practice meetings where feedback from local stakeholders was solicited and incorporated to better meet their needs and optimize workflow.

The first PDSA cycle began on October 11th and ended on October 16th, and a practice meeting was attended on October 17th to inquire about strengths and weaknesses of the toolkit's workflow thus far. Adjustments were then made to the toolkit, and the second PDSA cycle began on October 18th. This pattern continued, with the second PDSA cycle ending on October 25th. A third PDSA cycle ranged from October 26th until December 7th. The fourth and final PDSA cycle lasted from December 8th until December 15th.

Study of the Interventions

Both qualitative and quantitative data were intended to be obtained during this project. Qualitative data about changes in provider comfortability with managing PMD following the advent of the toolkit were intended to be obtained anonymously using a 5-point Likert-scale survey created in SurveyMonkey. This survey was first distributed at a practice meeting prior to the onset of the first PDSA cycle, but it was not distributed for a second time following the project due to the low response rate during initial distribution. The results of baseline and final data would have been displayed comparatively in a bar graph, which would have illustrated the number of providers indicating each answer choice on the Likert-scale survey.

Quantitative data about the changes in PMD screening rates at the clinic were displayed in a line graph. Specifically, the percentage of patients between 30 and 34 weeks' gestation who were seen and screened for PMD was measured each week. Ten data points were created, with each point corresponding with each week of the project's implementation period. The results displayed in the line chart were visually compared with the baseline data obtained prior to the project.

In order to seek feedback from the local stakeholders throughout the project, attendance was made to routine practice meetings throughout the course of the project where time was

allotted for clinic staff to vocalize feedback about the project. Feedback was additionally solicited from the clinic's midwives, physicians, MAs, and department manager via email.

Measures

To retrieve data about the success of this toolkit, following the implementation period, this project accessed the EHR of every patient that was cared for between 30 and 34 weeks' gestation to determine the percentage of patients seen during this gestational age range who were screened for PMD and received an EPDS score in their flowsheet. Comparing the rates of PMD screening in the third trimester before and after implementation of the toolkit allowed the project to measure whether patients were adequately screened for PMD.

Additionally, providers were given surveys both prior to and immediately following the implementation period to assess their comfortability with managing PMD. Given the current lack of evidence about the best way to glean such qualitative information from healthcare providers, this project utilized a 5-point Likert-scale survey to obtain this information. Specifically, a 5-point Likert-scale survey was utilized and administered anonymously via SurveyMonkey at two regularly held practice meetings. The survey consisted of a single question, "Please circle the response that most accurately reflects your level of agreement with the following statement: I feel very comfortable with the process of providing referrals to relevant mental health resources to my patients during the third trimester." Answer choices included: (1) Strongly disagree, (2) Disagree, (3) Neutral, (4) Agree, and (5) Strongly agree.

A secure spreadsheet was used in the aggregation of PMD screening data over the course of this quality improvement project. Qualitative data about provider comfortability and quantitative data about PMD screening rates were collected by the doctoral student during the month leading up to implementation of the project to establish baseline numbers as well as during the following ten-week implementation period. A line graph was created to demonstrate quantitative results. Qualitative data will be displayed as a bar graph. Projected balancing measures were developed from information retrieved from attendance at routine clinic meetings

where staff were allotted time to provide categorized feedback on their experience with the toolkit.

While general feedback throughout the course of the project was welcomed, stakeholders were encouraged to provide feedback that could be categorized into Navigation, Functionality, Usability, and Workload. This model was taken from Flanagan et al.'s (2011) study on Workflow Integration Surveys (WIS), which demonstrated that a successful metric for assessing clinical workflow integration includes these facets. Specifically, the 'Navigation' category prompted stakeholders to provide feedback about the ease with which they were able to navigate documents in the toolkit. The 'Functionality' category prompted stakeholders to provide feedback about whether the toolkit and new workflow actually fostered their abilities to detect and manage PMD. The 'Usability' category prompted stakeholders to provide feedback about whether the new workflow was easy or difficult for them to understand and use. The 'Workload' category prompted stakeholders to provide feedback about the degree to which the new workflow increased their workload

Analysis

Scoring of the Likert-scale surveys are evaluated by calculating the frequency as a percentage of each answer choice, as supported by Sullivan & Artino (2013), who stated that such scoring of Likert-scales is appropriate if the sample size is at least greater than five. Given the fact that the clinic was staffed by a total of 18 providers, this method for scoring the Likert-scale was deemed suitable. Using this method of scoring, a bar graph will be created to illustrate the change in frequency for each of the five answer choices before and after the implementation period. Displaying this data in a bar graph would show the relative increase in provider comfortability with providing referrals for relevant mental health resources to third-trimester patients as a result of the project's toolkit.

Interpretation of the quantitative data was done using statistical analysis. Specifically, a two-proportion Z-test was utilized in order to calculate whether the percentage of patients

screened between 30 and 34 weeks' during the project was statistically significantly distinct from the percentage of patients screened with an EPDS for a second time in pregnancy during the third trimester during the month leading up to implementation of the interventions.

Ethical Considerations

Measuring the toolkit's efficacy for improving PMD screening rates required examination of the EPDS flowsheets in each individual patient chart cared for in the ambulatory clinic during a period of four months. No protected health information (PHI) or identifying information was retrieved or stored, and no data in the spreadsheet of EPDS screening rates could be linked back to specific patients. Patient confidentiality was maintained in accordance with hospital policy at all times, both in the accessing of EHRs and in the aggregation of data into the secure spreadsheet. To confirm this project was not research involving human subjects, a request was sent to the Oregon Health & Science University Institutional Review Board (IRB), and the project was judged not to be human research.

Results

Between October 10th and December 15th, a total of 64 patients were seen for antenatal visits between 30 and 34 weeks' gestational age. Of these patients (n=64), 59% were screened with the EPDS for a second time, as evidenced by documentation in the EPDS flowsheet. The percentage of patients screened for a second time between 30 and 34 weeks' gestation fluctuated each week of the project's implementation period as follows (Figure 1). During the first week, 67% (n=6) received a second EPDS flowsheet score; during the second week, 44% (n=9) received a second EPDS flowsheet score; during the third week, 70% (n=10) received a second EPDS flowsheet score; during the fourth week, 67% (n=9) received a second EPDS flowsheet score; during the fifth week, 100% (n=5) received a second EPDS flowsheet score; during the sixth week, 44% (n=9) received a second EPDS flowsheet score; during the seventh week, 60% (n=5) received a second EPDS flowsheet score; during the eighth week, 80% (n=5) received a second EPDS flowsheet score; during the ninth week, 0% (n=2) received

a second EPDS flowsheet score; during the 10th week, 25% (n=4) received a second EPDS flowsheet score (Figure 1). These weekly results are compared with the baseline data, 14% (n=184), and are visually represented in a line graph (Figure 1).

The Likert-scale survey on provider comfortability with managing PMD was administered to 18 providers, however, only three initial responses were obtained (Figure 2). This low response rate precluded it from being able to gather any statistically meaningful data per Sullivan & Artino's (2013) criteria.These three initial responses to the survey question "Please circle the response that most accurately reflects your level of agreement with the following statement: I feel very comfortable with the process of providing referrals to relevant mental health resources to my patients during the third trimester" included one 'Agree' and two 'Disagree' answers. Because the survey was intended to represent the providers' comfortability prior to initiation of the project, soliciting additional responses to reach Sullivan & Artino's (2013) recommended baseline amount of five responses for meaningful statistical interpretation of Likert-survey changes was not possible, as the results would feasibly have been contaminated by the fact that the project's interventions were already in progress at that point. For this reason, the post-project Likert-scale survey was not administered, thus preventing this project from measuring any qualitative data about comfortability with screening.

Summary

This project was unable to gather any data about changes in provider comfortability with managing PMD with implementation of the new workflow and addition of the new PMD resource toolkit. However, statistically significant improvements were observed in the percentage of patients re-screened for PMD during the third trimester. While this project did not reach its anticipated goal to screen 75% of patients, this is not reflective of poor results given that the goal of 75% was arbitrary. Particular strengths of this project included: (1) utilization of Epic dot phrases for easy electronic access to mental health resources, (2) the breadth of relevant, local mental health resources included in the document, (3) collaboration between team members to

share workload, (4) utilization of evidence-based ways to solicit feedback, and (5) standardizing the format in which EPDS scores are documented in the EHR.

Limitations

Imprecision in design was a limiting factor for this study. This was observed during the only week of the study that fell below the baseline. During Week 9, 0% of patients seen between 30 and 34 weeks' were screened with the EPDS. However, this dramatic decrease (from 80% in Week 8 to 0% in Week 9) is likely due to the substantially smaller sample size (n=2) in Week 9 compared with the average weekly sample size (n=6.4). In terms of inpresion in design, the study was also limited by the fact that feedback was only solicited from providers. Given that MAs were responsible for administering EPDS questionnaires and recording the flowsheet scores which would go on to serve as the project's cornerstone dataset, this study was held back by the fact that the MAs were not asked to provide insights about what about the workflow was effective and what was not.

Certain contextual elements also posed limitations to this study. The clinic underwent some staffing changes over the course of the project that potentially led to less consistency in adoption of the new workflow. Specifically, there was turnover among two of the MAs over the 10-week implementation period, and one of the midwifery providers took a leave of absence during the first three weeks of the study.

Another limitation of this project was confusion surrounding the collaboration between MAs and providers with regard to their distinct scopes of practice within the new workflow. While the MAs were responsible for administering the EPDS while rooming patients and later recording those scores in the flowsheet, the providers had separate responsibilities that didn't include any protocol for acknowledging those scores. Specifically, the providers were responsible for adding the toolkit resources to the AVS, but this aspect of the new PMD protocol was unrelated to the EPDS scores. One patient might receive a normal EPDS score but indicate

they want behavioral health resources while another patient might have an abnormally high EPDS score of 13, but not request any mental health resources.

The project was limited by the fact that there was no set protocol around the communication of EPDS scores from MAs to providers, and there was no set protocol for providers to follow when patients had abnormal scores. By failing to map out a uniform way by which providers could address elevated EPDS scores with their patients, this project's impact on improving PMD management was considerably limited, especially when compared to its success with regard to improving the evaluation and detection of PMD. The project's overall impact improved patient access to mental health resources regardless of a patient's PMD status . This project performed poorly in terms of actually improving provider management of PMD, which was an original global aim.

Seeing as implementation of the new workflow and practice toolkit changed alongside PMD screening rates, and no major confounding or extraneous variables are likely responsible for the results, this QI project possessed internal validity. This project is not generalizable to other contexts, because pregnant patients are typically not seen for routine prenatal visits during the trimester at non-obstetric clinics.

Interpretation

When interpreting the results of this project, it is important to consider the nuances in the relationship between the baseline (14%; n=184) and post-implementation results (59%; n=64). Part of this project's intention was to go beyond simply increasing the EPDS screening rates during the third trimester by also creating a workflow that standardized this process. This was done by specifying that only patients between 30 and 34 weeks' gestation would get screened. However, these results were compared to slightly more generous baseline data. Specifically, rather than calculating the percentage of patients between 30 and 34 weeks' gestation that were screened with the EPDS during the baseline month (August), the percentage of total third trimester patients that were screened during the baseline month was calculated. In other words,

while the project only looked at patients between 30 and 34 weeks', the baseline data took into account all patients that were seen between 28 weeks' and 42 weeks'. While 25 of the 184 third-trimester patients examined for the baseline data were screened (14%), 38 of the 64 patients examined during the project were screened (59%), implying that there was a 45% difference in proportions, where the 95% Confidence Interval ranges from 31.5% to 57%. This adjustment in sample sizes further strengthens the identified need to increase third trimester screening rates, and it also explains why the sample size from the baseline month is nearly three times the size of the project's sample size, which spanned more than twice the amount of time. Using this information, a two-proportion Z-test calculator was used to confirm that the increase in screening rates over the course of the project (59%) was significantly statistically larger than the baseline screening rate (14%), $Z=7.25$, $p<0.0001$.

Compared with other similar studies, this project had impressive results. One study from Yawn et al. (2012) demonstrated a two-fold increase in Postpartum Depression screening rates following the advent of a practice toolkit. Another study from Goff et al. (2020) demonstrated a 10% increase in Postpartum Depression detection rates when pediatric clinics implemented a new workflow. This QI project was unique from those studies in that it did not involve postpartum patients, and it did incorporate standardized documentation of screening scores in its practice toolkit. This particular inclusion may partially explain its higher success rate, with a more than four-fold increase in PMD detection. There are no studies to date that measure the influence of practice toolkits on increasing the detection of PMD during the third trimester.

The works from Yawn et al. (2012) and Goff et al. (2020) do not include information about which members of the clinic were responsible for administering screenings or recording scores. In this QI project, the majority of the new workflow was designated to the clinic's MAs, which may provide some context for results. As email response rates from providers were lower than expected, it may be the case that these providers were suffering from email fatigue, thus resulting in less third trimester patients being screened than was anticipated (75%).

Next Steps

Including the entire team (MAs, department manager, and registered nurses) in feedback cycles would be helpful moving forward. Specifically, feedback from MAs might provide additional insights about how to improve workflow around the EPDS administration and communication between the team. Drawing from pre-existing protocols for blood pressure monitoring may be of utility here, as this is another area in which MAs gather objective data about the patient and relay it to the provider. However, it is possible that the EPDS workflow would not lend well to the same process, because patients typically take several minutes to fill out the EPDS during the time period between when the MA leaves the room after rooming the patient and when the provider comes in to start the visit. ACOG (2024) suggested that patients receive their EPDS upon check-in and fill the questionnaire out while in the waiting room before the MA calls them back to be roomed. Regardless of how it is done, establishing a streamlined method for calling provider attention to elevated EPDS scores is an important next step for this project.

Another key next step is to create a uniform protocol for providers to follow when they identify a patient with an elevated EPDS score. The importance of this piece of the workflow is acknowledged by ACOG (2024), as they said positive scores should be promptly addressed, but they made no recommendation in their recent PMD update about how to do this. Next steps for this project should include implementation of an evidence-based protocol for promptly addressing positive EPDS scores during the third trimester.

While this project had limitations that should inform its next steps, it also set into motion several innovative new protocols that should also be carried forward in its future directions. Firstly, the addition of the robust PMD resource toolkit for providers and patients was cited as being helpful by multiple stakeholders, and it should thus be carried forth. The Washington County Nurse Referral Program was cited as being the most used resource by one stakeholder, but the program itself was experiencing an overload of requests during the time of the project,

thus preventing it from being used as often or as effectively as was hoped. For this reason, moving forward, the project would likely benefit from expanding its toolkit resources to include a more viable home nurse referral program if there is one available. Another strength of the project that should be kept to promote success in future iterations is the self-referral process by which patients indicated which PMD resources they wanted included in their AVS, as it prevented both assumptions about what patients wanted as well as too much additional workload for providers. Finally, standardizing the documentation of EPDS scores in the flowsheet was innovative in that it allowed clinicians mutually caring for patients to easily see if their patients were due for re-screening or not, and this piece of the project's workflow should also be continued moving forward.

The final point of discussion with regards to next steps has to do with the scoring of the EPDS. Recall that a score of ≥10 identifies patients who are at risk for PMD (Levis et al., 2020). The EPDS does not, however, include any recommendations for identifying patients at risk for PMD based on proportional changes in their scores over time. For example, a patient who receives a 0 on her initial prenatal screening and an 8 on her third-trimester screening will go undetected, seeing as her score is below the cutoff threshold of 10. However, this jump from 0 to 8 may provide some meaningful information about a trajectory she is on, which could predict an elevated score at her 6-week postpartum visit before things get too severe. With the advent of ACOG's (2023) recommendation to screen twice in pregnancy, more research is needed about the utility of an EPDS scoring basis that relies on comparing results over time. In the meantime, future iterations of this project may benefit from following up with patients who incur a certain percentage increase in their EPDS score over the course of their pregnancy.

Conclusion

A regimented system for routinely screening patients for PMD in the third trimester creates the foundation for a focused and meaningful quality improvement project, as it takes into consideration recently updated recommendations from ACOG (2023) and increases provider

adherence with EBP. The primary objective of this project was to launch a novel PMD toolkit in an ambulatory prenatal clinic that improved detection of PMD in the third trimester. While this project technically failed to meet its arbitrary specific aim of increasing the rate that third trimester patients were screened with the EPDS to 75%, it did facilitate a more than four-fold increase in third trimester EPDS screening rates. Recalling that the first step in treating PMD relies on early detection of the problem, the same logic may be applied to improving the problem on a larger, public health scale. This project succeeded in increasing early PMD detection during the third trimester, which lays out the groundwork for understanding what the specific needs are at this local prenatal clinic. A more comprehensive and detailed approach to detecting and treating PMD in the future would require more feedback solicitation and closed-loop communication between MAs, providers, and QI project facilitators. The creation and maturation of this third trimester EPDS screening system is a concrete and meaningful aspect of improving patient wellbeing and best practice in the ambulatory obstetric setting.

References

Anxiety and Depression Association of America (ADAA). (2023). *Perinatal Mood Disorders*. Retrieved from: https://adaa.org/find-help-for/women/perinatalmoodisorders#:~:text=While%20many%20women%20experience%20some,symptoms%20of%20depression%20or%20anxiety

Bayrampour, H., Hapsari, A. P., Pavlovic, J. (2018). Barriers to addressing perinatal mental health issues in midwifery settings. *Midwifery, 59*, 47-58. https://doi.org/10.1016/j.midw.2017.12.020

Benudis, A., Re'em, Y., Kanellopoulos, D., Moreno, A., & Zonana, J. (2022). Patient and provider experiences of telemental health during the COVID-19 pandemic in a New York City academic medical center. *Psychiatry research*, *311*, 114496. https://doi.org/10.1016/j.psychres.2022.114496

Dagher, K. R., Bruckheim, H. E., Colpe, L. J., Edwards, E., White, D. B. (2021). Perinatal depression: Challenges and opportunities. *Journal of Women's Health, 30*(2). https://doi.org/10.1089/jwh.2020.8862

DATAUSA. (2023). Oregon. DataUsa. Retrieved on May 19, 2023 from: https://datausa.io/profile/geo/oregon

Flanagan, M., Arbuckle, N., Saleem, J. J., Militello, L. G., Haggstrom, D. A., & Doebbeling, B. N. (2011). Development of a workflow integration survey (WIS) for implementing computerized clinical decision support. *AMIA ... Annual Symposium proceedings. AMIA Symposium*, *2011*, 427–434.

Getahun, D., Oyelese, Y., Peltier, M., Mensah, N., Avila, C., Fassett, M. (2023). Trends in postpartum depression by race/ ethnicity and pre-pregnancy body mass index. *American Journal of Obstetrics and Gynecology, 228*(1), S122-S123. https://doi.org/10.1016/j.ajog.2022.11.248

Goff, S. L., Moran, M. J., Szegda, K., Fioroni, T., DeBanate, M. A., & Byatt, N. (2020). Development and pilot testing of an adaptable protocol to address postpartum depression in pediatric practices serving lower-income and racial/ethnic minority families: contextual considerations. *Implementation science communications*, *1*, 66. https://doi.org/10.1186/s43058-020-00049-x

Khanlari, S., Eastwood, J., Barnett, B. *et al.* (2019). Psychosocial and obstetric determinants of women signaling distress during Edinburgh Postnatal Depression Scale (EPDS) screening in Sydney, Australia. *BMC Pregnancy Childbirth, 19*, 407. https://doi.org/10.1186/s12884-019-2565-3

Kroh, S. J., & Lim, G. (2021). Perinatal depression. *International anesthesiology clinics*, *59*(3), 45–51. https://doi.org/10.1097/AIA.0000000000000325

Langley, G. J., Moen, R. D., Nolan, K.M., Nolan, T. W., Norman, C. L., Provost, L. P. (2009). *The Improvement Guide* (2nd edition). San Francisco, CA: Jossey-Bass.

Levis, B., Negeri, Z., Sun, Y., Benedetti, A., Thombs, B. D., & DEPRESsion Screening Data (DEPRESSED) EPDS Group (2020). Accuracy of the Edinburgh Postnatal Depression Scale (EPDS) for screening to detect major depression among pregnant and postpartum women: systematic review and meta-analysis of individual participant data. *BMJ (Clinical research ed.)*, *371*, m4022. https://doi.org/10.1136/bmj.m4022

Li, S., Cao, M., & Zhu, X. (2019). Evidence-based practice: Knowledge, attitudes, implementation, facilitators, and barriers among community nurses-systematic review. *Medicine*, *98*(39), e17209. https://doi.org/10.1097/MD.0000000000017209

Malterud, K., Fredriksen, L., & Gjerde, M. H. (2009). When doctors experience their vulnerability as beneficial for the patients: a focus-group study from general practice. *Scandinavian journal of primary health care*, *27*(2), 85–90. https://doi.org/10.1080/02813430802661811

McKee, K., Admon, L. K., Winkelman, T. N. A., Muzik, M., Hall, S., Dalton, V. A., Zivin, K. (2020). Perinatal mood and anxiety disorders, serious mental illness, and delivery-related health outcomes, United States 2006-2015. *BMC Women's Health, 20*, 150. https://doi.org/10.1186/s12905-020-00996-6

Mongelli, F., Georgakopoulos, P., & Pato, M. T. (2020). Challenges and Opportunities to Meet the Mental Health Needs of Underserved and Disenfranchised Populations in the United States. *Focus (American Psychiatric Publishing)*, *18*(1), 16–24. https://doi.org/10.1176/appi.focus.20190028

National Association of Perinatal Social Workers (NAPSW). (2023). *What is a perinatal social worker?* Retrieved from: https://www.napsw.org/what_is_a_perinatal_social_wor.php#:~:text=Perinatal%20social%20workers%20work%20to,families%20move%20toward%20their%20future

National Institute of Mental Health (NIMH). (2022). *Help for mental illnesses.* Retrieved from: https://www.nimh.nih.gov/health/find-help#part_2384

Ogrinc, G., Davies, L., Goodman, D., Batalden, P., Davidoff, F., Stevens, D. (2016). SQUIRE 2.0 (Standards for QUality Improvement Reporting Excellence): Revised publication guidelines from a detailed consensus process. *BMJ quality & safety, 25*(12), 986-992. https://doi.org/10.1136/bmjqs-2015-004411

Oregon Health Authority, Public Health Division. (2023). *Maternal Mental Health*. Retrieved from: https://www.oregon.gov/oha/PH/HEALTHYPEOPLEFAMILIES/WOMEN/MATERNALMENTALHEALTH/pages/index.aspx#:~:text=One%20in%20four%20Oregon%20women,or%20the%20first%20year%20postpartum.

Palmer, C. S., Brown Levey, S. M., Kostiuk, M., Zisner, A. R., Tolle, L. W., Richey, R. M., & Callan, S. (2022). Virtual Care for Behavioral Health Conditions. *Primary care*, *49*(4), 641–657. https://doi.org/10.1016/j.pop.2022.04.008

Postpartum Support International (PSI). *Screening Recommendations.* Retrieved on June 14th, 2023 from: https://www.postpartum.net/professionals/screening/#:~:text=Postpartum%20Support%20International%20(PSI)%20recommends,Questionnaire%20(PHQ%2D9)

Robinson, F. (2018). Should doctors share their personal experiences of healthcare with patients? *The BMJ, 363*. https://doi.org/10.1136/bmj.k4312

Rogers, M. (2019). No Journals, No evidenced-based practice: Research inaccessibility affects many nurses. *The American Journal of Maternal Child Nursing, 44*(6), 309. https://doi.org/10.1097/NMC.0000000000000573

Sacks, A. (2019). *Every Mother Counts*. Retrieved from: https://everymothercounts.org/on-the-front-lines/name-it-to-tame-it-why-pmad-is-replacing-postpartum-depression/

Shuman, C. J., Peahl, A. F., Pareddy, N., Morgan, M. E., Chiangong, J., Veliz, P. T., Dalton, V. K. (2022). Postpartum depression and associated risk factors during the COVID-19 pandemic. *BMC Research Notes, 15*(102). https://doi.org/10.1186/s13104-022-05991-8

Sullivan, G. M., & Artino, A. R., Jr (2013). Analyzing and interpreting data from likert-type scales. *Journal of graduate medical education*, *5*(4), 541–542. https://doi.org/10.4300/JGME-5-4-18

Steenland, M., Trivedi, A. (2023). Association of Medicaid expansion with postpartum depression treatment in Arkansas. *JAMA Health Forum, 4*(2), e225603. https://doi.org/jamahealthforum.2022.5603

Tainaka, H., Takahashi, N., Nishimura, T., Okumura, A., Harada, T., Iwabuchi, T., Rahman, M. S., Nomura, Y., Tsuchiya, K. J. (2022). Long-term effect of persistent postpartum depression on children's psychological problems in childhood. *Journal of Affective Disorders, 305,* 71-76. https://doi.org/10.1016/j.jad.2022.02.061

Templeton, A. Oregon Public Broadcasting (OPB). (2023). *Oregon's many mental health crises.* Retrieved from: https://www.opb.org/article/2023/03/14/oregon-mental-health-services-problems/

Thoele, K., Ferren, M., Moffat, L., Keen, A., Newhouse, R. (2020). Development and use of a toolkit to facilitate implementation of an evidenced-based intervention: a descriptive case study. *Implementation Science Communications, 1*(86). https://doi.org.10.1186/s43058-020-00081-x

Yamada, J., Shorkey, A., Barwick, M., Widger, K., Stevens, B. J. (2015). The effectiveness of toolkits as knowledge translation strategies for integrating evidence into clinical care: A systematic review. *BMJ Open, 5*(4)e006808. https://doi.org/10.1136/bmjopen-2014-006808

Yawn, B. P., Dietrich, A. J., Wollan, P., Bertram, S., Graham, D., Huff, J., Kurland, M., Madison, S., Pace, W. D., & TRIPPD practices (2012). TRIPPD: a practice-based network effectiveness

study of postpartum depression screening and management. *Annals of family medicine*, *10*(4), 320–329. https://doi.org/10.1370/afm.1418

Appendix A

Table of Contents

Appendix B

Please check any of the following mental health resources you would like:

Suicide Hotline (English & Spanish)	
National Maternal Mental Health Hotline	
Multnomah County Crisis Line	
Urgent Walk-In Therapy Information	
Psychiatric Hospitalization & Intensive Outpatient Programs	
Counseling Services (OHP / Affordable)	
Group Counseling & Support	
Couples Counseling	
How to Find a Mental Health Counselor	
African American Mental Health Providers	
General Pregnancy Resources	
Spanish Anxiety & Depression Brochures	
Domestic Violence & Sexual Assault Resources	
Substance Use & Recovery Resources	
Eating Disorder & Body Image Resources	
LGBTQIA+ Resources	
Trauma Treatment Resources	
Grief & Loss Resources	

Figure 1

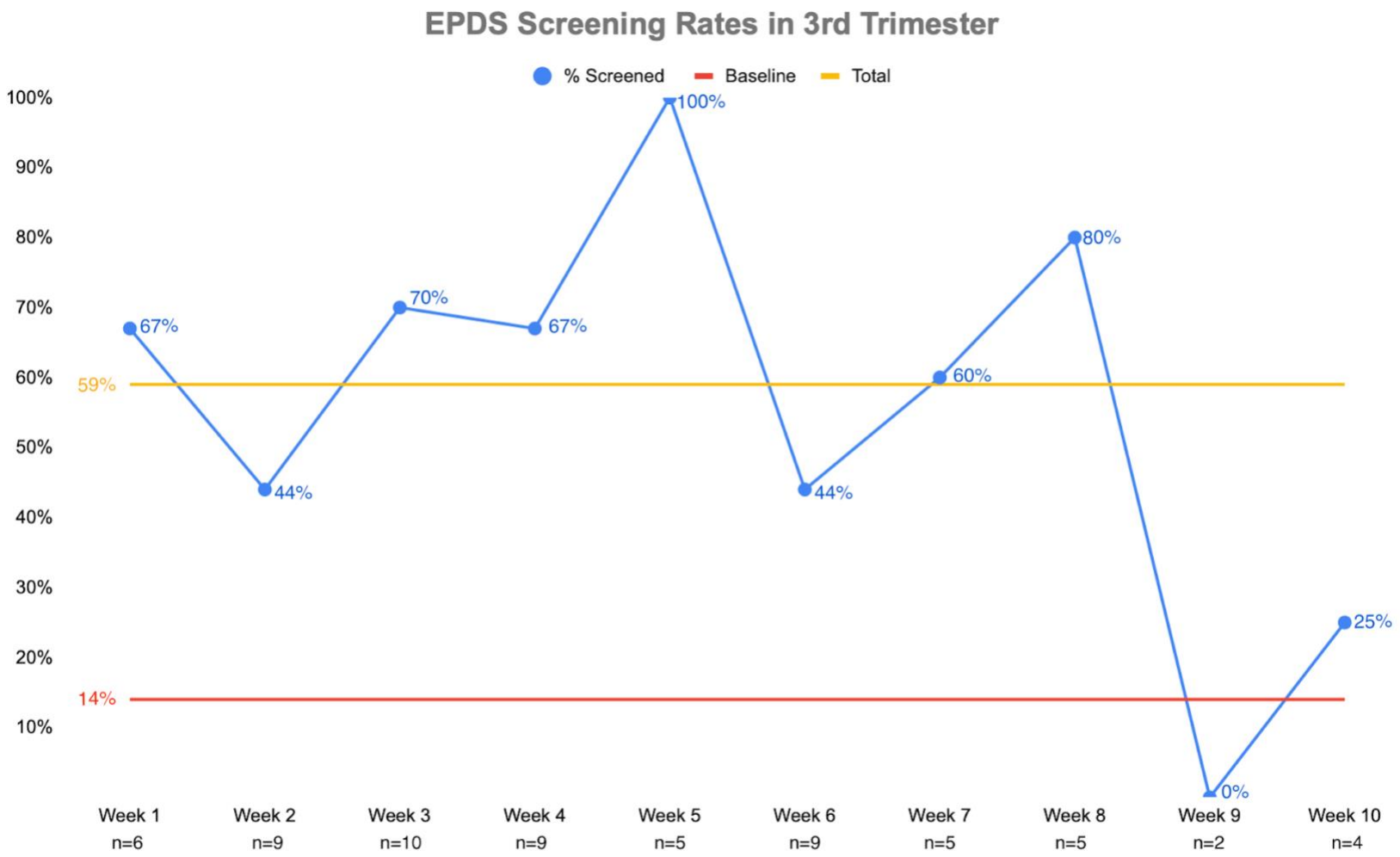
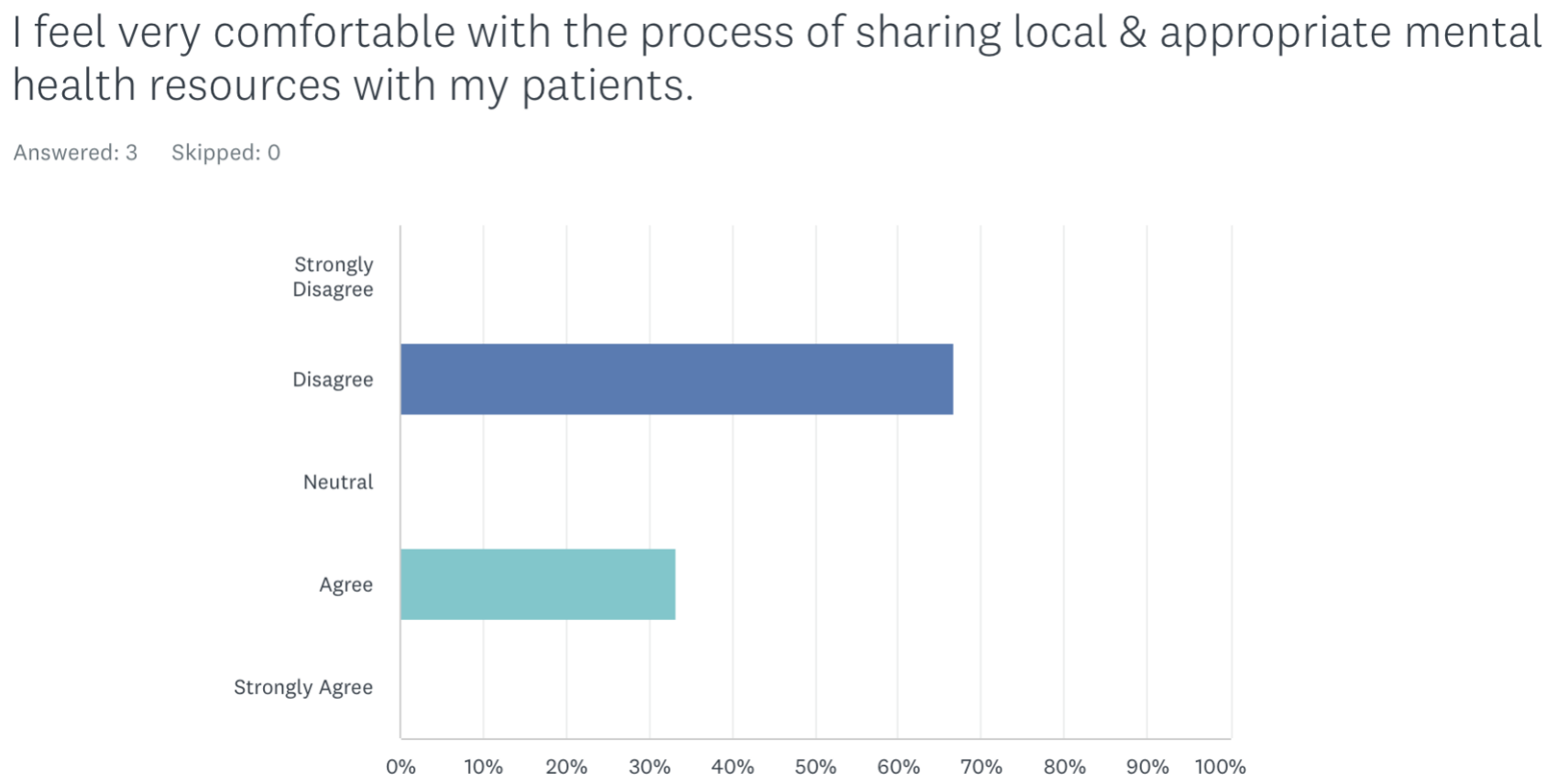

EPDS Screening Rates in 3rd Trimester
% Screened
Baseline
Total
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
59%
14%
67%
44%
70%
67%
100%
44%
60%
80%
0%
25%
Week 1
n=6
Week 2
n=9
Week 3
n=10
Week 4
n=9
Week 5
n=5
Week 6
n=9
Week 7
n=5
Week 8
n=5
Week 9
n=2
Week 10
n=4

Figure 2


I feel very comfortable with the process of sharing local & appropriate mental health resources with my patients.
Answered: 3 Skipped: 0
Strongly Disagree
Disagree
Neutral
Agree
Strongly Agree
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%