

**Telemedicine Interventions to Increase Postpartum Depression Screening Rates in
Postnatal Patients: A Focus on a Vulnerable Patient Population**

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Abstract

Introduction/Purpose

Postpartum depression (PPD) is one of the mothers' most common health problems following childbirth. The diagnosis of PPD is on the rise, especially in Alabama. Research shows this vulnerable population of postpartum patients frequently do not come for their postpartum exam and, therefore, get lost in follow-up after delivery. Many effective therapies have been broadly concluded to prevent or treat PPD. However, despite available treatments for PPD, numerous barriers hinder access to care, including stigma, time, financial constraints, and childcare concerns. This quality improvement project aimed to increase the postpartum screening rates for PPD.

Methods

A telemedicine visit with postnatal patients was conducted at three weeks postpartum using the Edinburgh Postnatal Depression Scale (EPDS) tool. Education was also performed via this telemedicine visit regarding other postpartum and infant care topics, as well as support provided, and questions answered for these new mothers.

Results

This telemedicine intervention at three weeks increased PPD screening to the postnatal patients who participated in the visit to 100%. Close to 75% of patients (n=87) attended these telemedicine visits. National statistics demonstrate a 60% show rate for scheduled face-to-face postpartum visits. Three-week telemedicine visits led to earlier awareness of PPD symptoms and earlier diagnosis of PPD, as well as increased referrals and treatment for these patients versus patients who are not screened until the traditional face-to-face visit at six to eight weeks.

Discussion

PPD is a debilitating illness that affects both mother and infant. It can also inhibit the bonding between a mother and her child. This condition is on the rise and contributes to poor health outcomes for both mother and child. The project rate of 75% visit attendance with 100% of those screened for PPD demonstrates a clinically significant increase compared to the national benchmark. Increased screening for PPD can lead to earlier recognition of symptoms and diagnosis as well as increased referrals and treatment for these patients.

Keywords: postpartum depression, postpartum depression screening, telemedicine interventions, vulnerable populations, and Edinburg Postnatal Depression Screen

Telemedicine Interventions to Increase Postpartum Depression Screening Rates in Postnatal Patients: A Focus on the Vulnerable Postnatal Patient Population

According to the World Health Organization (WHO) (2020), depression is the most significant cause of disability worldwide and a major contributor to the global disease burden. Women are about twice as likely to experience a major depressive episode as men (Kuehner, 2017). This difference is correlated with hormonal fluctuations in women, such as before menstruation, during pregnancy, postpartum, and at perimenopause/menopause (Albert, 2015).

Approximately 26%, or one in every four mothers, is estimated to suffer from postpartum depression (PPD) (Ceriani Cernadas, 2020). According to the American College of Obstetricians and Gynecologists (ACOG) (2018a), pregnancy, birth, and lack of adequate postpartum care have long-term effects on a woman's overall health. Unfortunately, the United States' maternal morbidity and mortality rates continue to climb. This issue is such a significant concern that Healthy People 2030 has set an objective to increase the proportion of women screened for postpartum depression at their postpartum checkups (Hanach et al., 2021).

Background

Currently, 40% of women do not attend postpartum visits (ACOG, 2018a). According to America's Health Rankings (2022), Alabama is one of the least healthy states in the nation for pregnant and postpartum women. The national average for maternal mortality is about 13.4%, whereas the average in Alabama is around 23.5%.

Evidence shows that depressed mothers report fewer healthy child development practices, fewer safety practices, and more frequent use of harsh discipline. Mothers with depressive symptoms have a significantly reduced likelihood of continuing to breastfeed, playing and

talking to the infant, showing books to their children, and following routines to promote positive child development.

PPD likely results from combined body, mind, and lifestyle factors. Early identification, more frequent screening, prevention, and treatment of PPD are crucial for improving overall outcomes for the mother and baby and decreasing maternal mortality and morbidity. Healthcare providers must understand the risk factors, signs and symptoms, prevention, use and interpretation of screening tools, and the appropriate referral point (Neiman et al., 2010).

Mass screening for PPD using a validated tool has been proven to improve the rates of detection and treatment of PPD and should be implemented (Neiman et al., 2010). Earlier and more frequent PPD screening is essential for positive health outcomes. Screening with the Edinburgh Postnatal Depression Scale (EDPS) before hospital discharge, screening via telemedicine at three weeks postpartum, screening at regularly scheduled in-person postpartum visits between six to twelve weeks, and screening at all other encounters through the first year postpartum are all indicated as evidence-based best practices (ACOG, 2018b).

Statistics show that Alabama mothers die from complications from pregnancy and childbirth at more than twice the national rate, and almost 70% of those deaths are preventable, according to the National Center for Health Statistics at the Centers for Disease Control and Prevention (Cason, 2022). The significance of this evidence has emerged to the forefront, given that more than one-half of pregnancy-related deaths occur after the infant's birth. Fifty-two percent of deaths occur after the delivery or in the postpartum period: 19% of all maternal deaths occur between one and six days postpartum, 21% of all maternal deaths are between one and six weeks postpartum, and 12% of all maternal deaths take place during the remaining portion of the year after giving birth. Although most are preventable, maternal deaths have increased in the

United States since 2000. This is also attributed to the fact that the US has a relative undersupply of maternity care providers, especially midwives, and lacks comprehensive postpartum support and follow-up for postnatal patients. (Tikkanen et al., 2020). The US has the lowest overall supply of midwives and ob-gyns, compared to ten other high-income countries, with only approximately 12 providers per 1,000 live births. It is thought that fewer providers result in less monitoring and close follow-up of postnatal patients, which in turn allows for adverse health outcomes. In Alabama, pregnant women may qualify for Medicaid during their pregnancy. Medicaid is the state health insurance program that provides medical coverage for those in need. The purpose of Medicaid is to provide people with health insurance coverage who might not have medical insurance coverage for themselves and their children. Pregnant women may qualify for Medicaid during their pregnancy if they are US citizens or have satisfactory immigration status and do not have any insurance or have a form of insurance with minimal to no obstetrical coverage or very high deductibles, and they meet the income guidelines (KFF, 2022). In Alabama, Medicaid pays for approximately 30,000 births per year, or one-half of the births in the state (Cason, 2022). As of April 2022, a provision in the American Rescue Plan Act of 2021 gives states a new option to extend Medicaid postpartum coverage to 12 months after delivery and is available to states for five years. Alabama is one of eight states that has approved and is planning to implement the 12-month extension as a one-year pilot program. If implemented, women in Alabama who qualify for Medicaid during pregnancy will have coverage for a year after giving birth versus the coverage that had previously ended on the last day of the month when the 60th postpartum day fell (Cason, 2022). As such, the window of opportunity for PPD screening for these patients could become much larger and more aligned with best practice recommendations.

Problem Statement

PPD is a prevalent mental health problem with serious adverse consequences for affected women and their infants (Zhao et al., 2021). Some clinical trials have found that telehealth interventions for women with PPD result in increased accessibility and improved treatment effectiveness (Arias et al., 2022). This QI practice improvement project aimed to increase postnatal appointment show rates with PPD screening through a telemedicine intervention. Increased screening protocols lead to earlier recognition of symptoms and, in turn, earlier treatment. Telehealth interventions providing education and support could effectively reduce the symptoms of depression and anxiety in women with PPD (Chow et al., 2021).

Organizational "Gap" Analysis of Project Site

Current State

Key missing, lacking, or inadequate indicators in the clinical setting related to this issue are that it is not current practice to track postpartum women after their delivery and try to ensure they return for the postpartum care they desperately need (Liu et al., 2022). Many efforts are made, such as scheduling patients for their postpartum visits at their last prenatal visit if it is known when they will be induced or have a scheduled c-section. Some providers mail postpartum patients thank-you cards. Some providers have their nurses call all their no-show patients to try to reschedule or track them in some way. However, there is no current uniform system in place for this, and as a result, many postpartum patients end up lacking the sufficient attention they need (Samantha Lewis, LPN; OB/GYN Charge Nurse; October 10, 2022). There is a need for a system or protocol that can be implemented and used by all Obstetrics and Gynecology (OB/GYN) practice providers and nurses at this clinical site to track patients in some way, especially our most vulnerable postpartum patients. The current state of practice for

depression screening at this practice site partly follows some of these best practice guidelines. It is routine for women who are seen in the OB/GYN clinic for their annual visit to have a depression screen completed with the Patient Health Questionnaire-2 (PHQ-2). The PHQ-2 inquires about the frequency of depressed mood or sadness over the past two weeks. The PHQ-2 includes the first two items of the Patient Health Questionnaire-9 (PHQ-9). Patients who screen positive with the PHQ-2 are then further evaluated with the PHQ-9 to determine whether they meet the criteria for a depressive disorder (Sun et al., 2020). If they meet these criteria, they are then counseled on this issue, started on medication, if indicated, and referred out for further mental health specialty care.

It is also routine for women who are seen for their postpartum visit in the OB/GYN clinic to be screened for depression with the EPDS tool. The EPDS is a 10-item questionnaire. Women are asked to answer each Likert scale question with a score of 0-3 in terms of the past seven days. A score is then calculated by adding the scores for each question. A total score of 13 or more is considered a flag for the need for follow-up of possible depressive symptoms. If the EPDS score is 13 or more, answers to questions 3, 4, or 5 suggest possible anxiety symptoms, or if question 10 has any positive response, patients are counseled on this issue, started on medication, if indicated, and then referred to an appropriate mental health professional (Shrestha et al., 2016).

Desired State

More professional organizations now recommend mandatory depression screening of pregnant and postpartum women: the American College of Obstetrics and Gynecology (ACOG), the American Academy of Pediatrics (AAP), the American Medical Association (AMA), and the United States Preventive Services Task Force (USPST) (Liu et al., 2022). The optimal timing of

these necessary depression screenings is the first prenatal visit, at least once in the second trimester, at least once in the third trimester, a six-week postpartum obstetrical visit (or at the first postpartum visit), repeated screening at six or 12 months in OB/GYN or a primary care setting, and at 3, 6, 9, and 12-month pediatric visits (Postpartum Support International, 2022). To optimize the health of women and infants, ACOG (2018b) recommends that all women have contact with their OB/GYN or other obstetric care providers within the first three weeks postpartum. ACOG also reinforces the importance of the "fourth trimester" and a new paradigm for postpartum care. The initial assessment at approximately three weeks postpartum should be followed with ongoing care as needed and include a comprehensive postpartum visit no later than 12 weeks after birth. The complete postpartum visit should include a full physical, social, and psychological assessment, including mood and emotional well-being. Women with chronic medical conditions such as mood disorders should be counseled regarding the importance of timely follow-up with their OB/GYN or primary care providers for ongoing care coordination. ACOG has long recommended depression screening for all women during the well-woman visit and the perinatal period. Also, because maternal PPD can have serious adverse effects on the mother and child relationship, resulting in an environment that can disrupt the infant's development, the American Academy of Pediatrics (AAP) recommends that mothers be screened for PPD at all well-child visits within the first year and that community resources be used for the treatment and referral of the depressed mother, and support is provided for the mother-child relationship (Earls et al., 2019). According to AAP, this regular and often PPD screening is considered the best practice in caring for infants and their families (MDH, 2015).

Theory-Practice Gap

A theory-practice gap occurs when practitioners struggle to integrate knowledge learned in the academic environment with real-world clinical practice. As standards of care continue to evolve and as healthcare providers attempt to move from traditional care to evidence-based care, there can often seem to be a disconnect between what is considered best practice and actual practice (Ajani & Moez, 2011). ACOG (2018a) practice guidelines recommend early contact with the patient's OB/GYN care provider after birth, at approximately three weeks postpartum, and routine screening for depression for all women at least once during the perinatal period. They also add that women at high risk of depression—for example, with a history of depression or anxiety—warrant incredibly close monitoring. Earls et al. (2019) state that the AAP recommends PPD screening for the mother at every well-child visit because pediatric providers are likely to see the mothers more often and have an opportunity to screen for PPD during a broader range of dates since statistics show an infant is much more likely to receive a two month well child check - 92% than a mother is likely to receive a postpartum visit (MDH, 2015). Although these are the current recommendation and common knowledge among maternity care providers, this is not current practice, indicating the existence of a theory-practice gap.

Review of the Literature

A literature review was conducted through the University of Alabama's electronic database through CINAHL, EBSCO host, and PubMed. The keywords used in this literature search include telemedicine interventions, postpartum depression screening, and Edinburgh Postnatal Depression Screen. The search identified 2,975 articles. After a full review of the articles, the ones that were selected for this project were quantitative and qualitative.

Study selection inclusion criteria included articles focusing on screening for PPD in the postnatal period, telemedicine interventions, vulnerable populations, and PPD screening tools.

Articles were eligible for criteria when written in English, peer-reviewed, available in full text, and published in the last five years. Two thousand nine hundred seventy-five articles were found and based on the criteria mentioned above; they were narrowed down to 225 articles. Of those 225 articles, only nine were considered relevant and used in this literature review. The relevant articles used were published between December 2018 and 2022.

Data Extraction

Using the PRISMA guidelines, data were extracted and organized under the headings: year, study purpose, study design, main study findings, and conclusion (APA, 2018).

Data Synthesis

The following findings from the review of literature include (a) representation in studies of vulnerable populations is low; (b) sample sizes in most studies may not be representative of the vulnerable population; (c) screening guidelines are not consistent across agencies; and may not be representative across studies; (d) interventions increase screening rates; (e) barriers present challenges for PP screening; (f) interventions are needed to improve screening rates. PPD is one of the most common problems among postnatal patients. However, screening for this condition and the different screening tools used are not uniform (Chow et al., 2021). All agree that it is crucial to screen for PPD. However, capturing all postpartum (PP) women in these PPD screenings can be challenging, especially in vulnerable populations. As stated, up to 40% of women do not return for a PP visit. The reasons for this vary but include lack of financial means, lack of reliable transportation, lack of childcare, and stigma attached to mental health conditions. Increased PPD screening is recommended, and telemedicine interventions have shown efficacy in earlier recognition of PPD symptoms as well as appropriate referrals for treatment. These telemedicine visits are more convenient and feasible for these PP patients (Liu et al., 2022).

These telemedicine interventions are also used to answer any questions these patients may have regarding postpartum self and infant care and to show support for these patients during times many new mothers find overwhelming (Zhao et al., 2021). Children born to women with PPD are at increased risk for delayed cognitive and language development, disorganized or insecure attachment, higher rates of behavioral problems, and lower grades later in life (Xueyan Liu et al., 2022).

Evidence-based Practice: Verification of Chosen Option

Based on the state of the literature, the evidence-based practice (EBP) intervention that was chosen to implement in this quality improvement project was telemedicine. Telemedicine has come a long way and has been more widely accepted by patients since the COVID-19 pandemic began. Telemedicine is a practical and feasible intervention that can eliminate many barriers to care for postnatal patients, such as time constraints, transportation issues, and childcare concerns (Adams et al., 2022).

PICOT

In postnatal women, will a telemedicine intervention at three weeks postpartum increase patient show rates and PPD screening compared to the national benchmark of postpartum patients who do not receive this telemedicine intervention?

Theoretical Framework or Evidence-based Practice Model

Feminism is the belief in and advocacy of the sexes' political, economic, and social equality, primarily through organized activity on behalf of women's rights and interests (Martin, 2002). There are two basic types of feminist perspectives: care-focused and power-focused approaches. Care-focused approaches argue that a feminine (relationship-focused) style of moral reasoning works just as well as a male (justice-focused) style. Power-focused approaches are

concerned with why women usually have less power than men. Both perspectives agree that any feminist approach to ethics must: view men and women as having fundamentally different life situations, provide ways to undermine the systematic subordination of women, offer methods for dealing with issues that arise in the private sphere, especially in domestic life, and take the moral experience of all women seriously (Butts & Rich, 2018).

Critical Theory seeks to understand and help overcome the social structures through which people are dominated and oppressed. It focuses on identifying inequalities due to class, race, industrial relations, and globalization (Martin, 2002). Feminism and critical theory can be synergistic when merged and applied to aspects of healthcare, especially those dealing with poor, vulnerable, and underserved populations. As healthcare providers, it is imperative to understand and try to mitigate the challenges that patients face in attaining comprehensive, holistic, and culturally sensitive healthcare. The impact of contextual risk factors on traditional PPD risk factors results in mental health disparities for low-income, rural, southern women. Thoroughly understanding these women's social and economic circumstances is the first step to developing and implementing interventions that help aggregate populations like these women to lessen their increased opportunity costs and seek the medical care they deserve. Advanced practice nurses should be compelled to prioritize this. In this way, applying Feminism and Critical Theory may help guide nursing care interventions that would be helpful to poor and underserved populations (Martin, 2002).

Goals, Objectives, and Expected Outcomes

The goal of this QI project was to increase patient postnatal show rates with PPD screening. The objective was for the principal investigator (PI) to conduct a telemedicine intervention with postnatal patients at three weeks postpartum. A postpartum depression screen

was performed using the EPDS to determine if a telemedicine intervention at three weeks postpartum would increase PPD screening in postnatal patients. The expected outcome was that the telemedicine intervention would increase postpartum visits and screening in these patients. This telemedicine intervention also strived to provide extra support for these patients at vulnerable times. The expected outcome was that the telemedicine intervention would increase postpartum screening in these patients. Setting facilitators included the ability to use the EHR system to obtain the data and the time allotted for the PI to conduct the visits. Setting barriers included difficulty with local approval for EHR access permission and concern over coverage and security for telehealth visits.

Barriers

Identification of barriers to screening for PPD in the PP period is essential. Most studies recognize that identifying and reducing barriers is necessary to increase screening rates in the PP period (Hanach et al., 2021). Barriers may include confusing consensus guidelines for which screening tool is most effective and should be used, fragmentation of care, the maternity care provider, and the healthcare system itself. Barriers for women may include a lack of knowledge of personal risk, denial, prioritization, lack of time and energy, and limited healthcare literacy. Postpartum screening rates are lower in patients with communication barriers, stress, domestic violence, and household instability. These factors are more commonly found in women from vulnerable populations (Arias et al., 2022). The diagnosis of PPD and the fear of the consequences of PPD may also lead to stigmatization. This fear may also prevent women from seeking help for symptoms of PPD (Zhao et al., 2021). Another disadvantage of telemedicine for perinatal mental health is the lack of behavioral activation, or the process of having patients schedule activities to improve their mood by increasing chances for pleasure, reward, or

accomplishment (Wassef & Wassef, 2022). Behavioral activation is a core feature of many psychotherapeutic treatment plans that aim to reduce social isolation by encouraging outings. For some women, in-person health appointments may represent one of the only opportunities or motivations to leave their homes. Especially since the COVID-19 pandemic, many support groups and mother-baby activity groups have been put on hold (Wassef & Wassef, 2022).

Facilitators

Increasing the facilitators for increased postpartum depression screening is an excellent measure to help a QI project be successful. Some facilitators for this project include the telemedicine delivery of this visit. Most people have 24-hour access to smartphones, which makes telemedicine delivery extremely popular and simplified (Nair et al., 2018). The telemedicine visit itself is a facilitator of this project because it eliminates struggles for postnatal patients in many ways. One of the first ways is that these new mothers do not have to leave the comfort and privacy of their own homes to participate in this type of healthcare visit. They do not have to risk getting their new infant out in the weather or exposing them to germs in a healthcare facility. They also do not have to try to find childcare or leave their new infant at such an early date after delivery or worry about supplementing the infant if they are breastfeeding. Telemedicine is also essential for accessibility to postnatal patients in rural areas since many of these resources are concentrated in large urban cities and academic centers (Wassef & Wassef, 2022). Another benefit to this type of healthcare delivery is that financial concerns about gas or lack of transportation are eliminated (Adams et al., 2022). Another facilitator for this project is that telemedicine is generally met with positive feedback from patients (Arias et al., 2022). Generally, studies have shown that telemedicine delivery of healthcare is safe, economical, effective, and widely accepted (Adams et al., 2022).

Methods (Plan)

All patients who delivered over a six-week time period were scheduled for a three-week postpartum telehealth visit. The attendance and EPDS completion rates were compared with the national benchmark to determine if this intervention significantly increased the number of patients who show for their appointment and were screened for PPD. If so, this would prove to be clinically significant.

Project Design

This quality improvement (QI) project sought to improve postnatal show rates with PPD screening, which can improve health outcomes for postnatal patients. The method used was a telemedicine visit at three weeks postpartum to screen for postpartum depression using the Edinburg Postnatal Depression Screening tool. Quantitative data was collected for this project. The quantitative data came from comparing the number of patients seen and screened with the telemedicine intervention to the national benchmark.

Project Site and Population

The OB/GYN practice site in Tuscaloosa, Alabama, is a multi-specialty, outpatient, community medical center serving West Alabama communities. It is located on the University of Alabama campus in Tuscaloosa, the state's oldest and largest public university. It is an academic research/teaching facility and is part of The College of Community Health Sciences, for which it provides the clinical rotations for the Family Medicine Residency Program (UA, 2022a). For this project, the practice site was narrowed to only include the OB/GYN multi-provider private practice clinic within the multi-specialty medical center. This practice site is not in a rural or medically underserved area; however, many patients travel from rural areas to be seen in the OB/GYN specialty clinic (UA, 2022b). According to the US Census Bureau (2021), the patient

population in and around Tuscaloosa, Alabama, that the OB/GYN clinic serves consists of approximately 63.6% Caucasian, 32.9% Black or African American, and 4.2% Hispanic or Latino. Tuscaloosa county is about 74% urban and 26% rural, with a population of approximately 227,007. 51.8% of this population are female, 10.3% of residents under age 65 do not have health insurance, and 14.4% live in poverty (US Census Bureau, 2021). The necessary resources for the project are minimal and include the Primary Investigator's (PI) time as the provider, the use of the clinical site EHR for secure record keeping and running of reports, and the use of the EPDS.

Measurement Instruments

This QI project collected quantitative data. The quantitative data came from the number of completed telemedicine visits with EPDS compared to the national benchmark. The EPDS is the most commonly used screening instrument in postnatal patients and is both sensitive and specific in detecting PPD (DelRosario et al., 2013) (Appendix A). The owners of the EPDS tool are J.L. Cox, J.M. Holden, & R. Sagovsky. However, licensing of the screening tool is public domain, so it is free for anyone for any purpose without restriction under copyright law (Patient Tools, 2022). The EPDS was published over 30 years ago and is suitable for use in research. It is widely used in many regions of the world and has been translated into over 60 languages (Cox, 2019). The psychometric properties of the EPDS in primary health care were: 86 % sensitivity (correctly identifying actual cases), 78 % specificity (correctly identifying people without the condition), and 73 % positive predictive value (proportion of respondents scoring positive in the test who had a mental disorder diagnosed by clinical interview) (Shrestha et al., 2016).

Data Collection Procedures

Data was collected in a patient interview via a telemedicine visit at three weeks postpartum. The patient's score on the Edinburg Postnatal Depression Screening tool was used to measure whether a patient has PPD or anxiety. Then appropriate referrals for treatment were made at that time. The PI then compared the national benchmark for postpartum show rate and EPDS completion rates of all scheduled postpartum visits to the show rates and EPDS completion rates for postpartum visits using the 3-week postpartum telemedicine intervention. These results determined that this telemedicine intervention can significantly increase the number of patients who attend this postpartum visit and are screened for PPD. Data was protected and stored in the practice site EHR just like any other office visit.

Data Analysis

Measurement is a powerful tool for assessing whether changes being made are leading to improvement, and it is a critical component of quality improvement (QI) projects (Costa et al., 2020). For instance, is there an increased completion rate of EPDS tools with the addition of the telemedicine intervention at three weeks postpartum? With increased screening, appropriate referrals can be made, and effective treatment rendered to these patients at a higher rate, resulting in improved outcomes for these patients. A Women's Wellness Clinic located at a facility very close to the OB/GYN practice site allowed for referral for a positive depression screen during pregnancy or in the postpartum period (Dr. Amy Lee, personal communication, November 4, 2022).

The three-week telemedicine show rates were compared to the national benchmark of 60% show rates to postpartum visits, and of that, 60% of patients who do show up for traditional face-to-face visits.

Cost-Benefit Analysis/Budget

Increased PPD screening leading to earlier recognition of symptoms and higher rates of referrals and treatment is a cost-saving benefit of this project over time when compared to the costs of untreated PPD. It is estimated that untreated postpartum mood and anxiety disorders cost an estimated 14.2 billion a year. This cost came not just from healthcare services for mothers but also from lost workforce productivity and increases in child developmental and behavioral disorders (MGH, 2018).

Timeline

The timeline proposed for the actualization of this project, starting with proposal approval, and continuing through data collection, data analysis of and interpretation of outcomes, and dissemination of findings, was approximately one year. Implementation lasted six weeks, with two weeks of preparation to identify patients and four weeks of data analysis. The final write-up took two months. Dissemination and publication will occur over approximately six months.

Ethical Considerations/Protection of Human Subjects

The University of Alabama (UA) Institutional Review Board (IRB) approval and approval from the University Medical Center will be obtained prior to initiating the project. All participants will be protected by the Health Insurance Portability and Accountability Act of 1996 (HIPAA) which, among other guarantees, protects the privacy of patient's health information (Modifications to the HIPAA Privacy, Security, Enforcement, and Breach Notification Rules, 2013). Additionally, Standards of Care for practice in a primary care office were carefully followed. All information collected to evaluate this project's impact was aggregated data from the project participants and did not include any potential patient identifiers.

The risk to patients participating in this project was no different from the risks of patients receiving standard postpartum care. Participant confidentiality was assured by coding the participants using unique identification numbers. The participants' list and identifying numbers was kept in a locked filing cabinet in the practice office, only accessible to the principal investigator. All electronic files containing identifiable information were stored on the HIPPA secure UA Box.

Results

Over the course of 9 weeks, 87 patients were scheduled for telemedicine postpartum visits at approximately three weeks postpartum. Of the 87 scheduled patients, close to 75% of patients attended these telemedicine visits. National statistics demonstrate a 60% show rate for scheduled face-to-face postpartum visits. The project rate of 75% demonstrates a clinically significant increase of 15% compared to the national benchmark.

Out of the 66 patients who participated in the telemedicine visits, 100% were screened for PPD with the Edinburg Postnatal Depression Screen. This is compared to a national average of approximately 87% of patients who report being screened for PPD in the traditional setting. Out of the 66 patients screened, 57% were found to have possible (score of 9-11), highly possible (score of 12-13), or probable depression/anxiety (score of 14 or higher). Of these 38 patients with a score of 9 or higher, two were referred to emergency mental health resources for the answer of 2 (sometimes) on question 10, which states, "The thought of harming myself has occurred to me." Twenty-six patients were started on antidepressant/antianxiety medications, and 22 were referred for mental health services. The difference in these numbers is related to some patients being agreeable to counseling but refusing medication, while others were agreeable to medication but refused referral to mental health services. Some patients declined both. This

option and continued monitoring were acceptable for patients with lower scores (9-13). Follow-up of all 38 patients who showed some degree of possible or probable depression symptoms remains ongoing. Of the 87 initial patients, only 42 have attended their traditional 6–8-week postpartum visit, and only 29 of these patients have attended both the telemedicine and conventional face-to-face postpartum visits.

Discussion

These results suggest that some patients will attend a telemedicine visit when they do not attend a face-to-face visit. The national average states that up to 40 % of postpartum patients do not attend the traditional face-to-face postpartum visit. This concludes that approximately 60% of postnatal patients receive recommended follow-up care. Based on calculations of the data from the telemedicine intervention, 66 out of 87 patients, or approximately 75 %, did attend their 3-week postpartum telemedicine visits. Furthermore, a telemedicine visit at 3 weeks may have resulted in a patient decrease in compliance with their face-to-face 6 to 8-week follow-up visits. If this is accurate, it will further impair complete patient assessment and the opportunity for many to initiate reliable contraception.

Some limitations of this research are that the EPDS was mainly intended to be a self-administered assessment tool. Reading these questions to patients over the phone could possibly skew the results due to the stigma attached to mental health. The short 9-week duration of this project and the small sample size could also be a limitation and skew the results. It would have been optimal to compare project outcomes to pre-intervention data at the site, but the data provided by the local site administrator was incomplete and unable to be compared.

One suggestion for future research would be to extend the project over a longer period with a larger sample size to see if the 15% increase holds true among more studies. More

extensive evidence is needed to determine if telehealth interventions for postnatal women result in increased accessibility, increased postpartum depression screening, and improved treatment effectiveness. Future research is also needed to determine the full effect of early telemedicine visits on the six to eight-week follow-up visit.

Conclusion

The studies mentioned herein show that even minor interventions such as anticipatory guidance before hospital discharge, followed by a phone call at 2-3 weeks postpartum, can result in reduced symptoms of depression, increased breastfeeding, and many other health benefits for both the mother and infant (Xueyan Liu et al., 2022). This type of initiative is vital to closing the Theory-Practice gap and improving clinical practice and patient care outcomes for all women in the vulnerable postnatal population (Wassef & Wassef, 2022). A telemedicine intervention is a potential benefit due to the fact it can be performed in the privacy of the patient's own home without the typical constraints many postpartum patients face, such as the stigma associated with mental health issues, the time crunch of being a new mother, as well as lack of childcare, transportation, or financial means (Liu et al., 2022).

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Appendix A

Edinburgh Postnatal Depression Scale (EPDS)

Name: _____ Address: _____

Your Date of Birth: _____

Baby's Date of Birth: _____ Phone: _____

As you are pregnant or have recently had a baby, we would like to know how you are feeling. Please check the answer that comes closest to how you have felt **IN THE PAST 7 DAYS**, not just how you feel today.

Here is an example, already completed.

I have felt happy:

- ☐ Yes, all the time
- ☒ Yes, most of the time This would mean: "I have felt happy most of the time" during the past week. ☐ No, not very often Please complete the other questions in the same way. ☐ No, not at all

In the past 7 days:

1. I have been able to laugh and see the funny side of things

- ☐ As much as I always could
- ☐ Not quite so much now
- ☐ Definitely not so much now
- ☐ Not at all

*6. Things have been getting on top of me

- ☐ Yes, most of the time I haven't been able to cope at all
- ☐ Yes, sometimes I haven't been coping as well as usual

2. I have looked forward with enjoyment to things ☐

As much as I ever did

- ☐ Rather less than I used to

☐ No, most of the time I have coped quite well

☐ No, I have been coping as well as ever

*7 I have been so unhappy that I have had difficulty sleeping

☐ Definitely less than I used to

☐ Hardly at all

*3. I have blamed myself unnecessarily when things went wrong

☐ Yes, most of the time

☐ Yes, some of the time

☐ Not very often

☐ No, never

4. I have been anxious or worried for no good reason

☐ No, not at all

☐ Hardly ever

☐ Yes, sometimes

☐ Yes, very often

*5 I have felt scared or panicky for no very good reason

☐ Yes, quite a lot

☐ Yes, sometimes

☐ No, not much

☐ No, not at all

☐ Yes, most of the time

☐ Yes, sometimes ☐ Not

very often

☐ No, not at all

*8 I have felt sad or miserable

☐ Yes, most of the time

☐ Yes, quite often

☐ Not very often ☐

No, not at all

*9 I have been so unhappy that I have been crying

☐ Yes, most of the time

☐ Yes, quite often

☐ Only occasionally ☐ No,

never

*10 The thought of harming myself has occurred to me

☐ Yes, quite often

☐ Sometimes

☐ Hardly ever

☐ Never

Administered/Reviewed by _____

Date _____

Source: Cox, J.L., Holden, J.M., and Sagovsky, R. 1987. Detection of postnatal depression: Development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry* 150:782-786 .

Source: K. L. Wisner, B. L. Parry, C. M. Piontek, Postpartum Depression N Engl J Med vol. 347, No 3, July 18, 2002, 194-199

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Edinburgh Postnatal Depression Scale (EPDS)

Postpartum depression is the most common complication of childbearing. ¹ The 10-question Edinburgh Postnatal Depression Scale (EPDS) is a valuable and efficient way of identifying patients at risk for "perinatal" depression. The EPDS is easy to administer and has proven to be an effective screening tool.

Mothers who score above 13 are likely to be suffering from a depressive illness of varying severity. The EPDS score should not override clinical judgment. A careful clinical assessment should be carried out to confirm the diagnosis. The scale indicates how the mother has felt **during the previous week**. In doubtful cases it may be useful to repeat the tool after 2 weeks. The scale will not detect mothers with anxiety neuroses, phobias or personality disorders.

Women with postpartum depression need not feel alone. They may find useful information on the web sites of the National Women's Health Information Center <www.4women.gov> and from groups such as Postpartum Support International <www.chss.iup.edu/postpartum> and Depression after Delivery <www.depressionafterdelivery.com>.

SCORING

QUESTIONS 1, 2, & 4 (without an *)

Are scored 0, 1, 2 or 3 with top box scored as 0 and the bottom box scored as 3.

QUESTIONS 3, 5-10 (marked with an *)

Are reverse scored, with the top box scored as a 3 and the bottom box scored as 0.

Maximum score: 30

Possible Depression: 10 or greater

Always look at item 10 (suicidal thoughts)

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Instructions for using the Edinburgh Postnatal Depression Scale:

1. The mother is asked to check the response that comes closest to how she has been feeling in the previous 7 days.
2. All the items must be completed.
3. Care should be taken to avoid the possibility of the mother discussing her answers with others. (Answers come from the mother or pregnant woman.)
4. The mother should complete the scale herself, unless she has limited English or has difficulty with reading.