

RESEARCH ARTICLE

Connecting during COVID: The application of teleservices in two integrated perinatal settings

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Abstract

Integrated perinatal behavioral healthcare provides opportunities to support women and their babies as part of their primary care medical home. The COVID-19 pandemic required significant changes to be made to medical practices to enhance safety and reduce risk, particularly for vulnerable populations, including pregnant women. Previously established modes of mental health service delivery in the HEART program, an integrated behavioral health program embedded in a primary care clinic for adolescent mothers and their babies, and the PROMISE Clinic, an integrated obstetric behavioral health program that serves pregnant women, quickly pivoted to telehealth services because of the pandemic. HEART serves a racially and ethnically diverse patient population, with over 85% of patients publicly insured. The PROMISE Clinic serves a socioeconomically, racially, and ethnically diverse patient population. Behavioral health clinicians implemented a variety of technology-based services including telephone interventions and support, virtual visits using iPads during medical visits, and video visits that patients accessed from their homes. In HEART, behavioral health visits continued at pre-COVID rates during telehealth adaptations. In the PROMISE clinic, the number of perinatal women seen doubled, the total number of patient contacts tripled, and the missed appointment rate significantly decreased during COVID. In the PROMISE clinic, significantly more White and Hispanic perinatal women were seen during COVID and telehealth adaptations, while significantly fewer Black perinatal women were seen during this period. Further research is indicated to examine patient attitudes towards telehealth services, barriers to treatment for Black women, and outcome data.

KEYWORDS

integrated behavioral health, perinatal mental health, telehealth services

1 | INTRODUCTION

Integrated perinatal behavioral health care provides opportunities to support women and their infants during pregnancy, as part of routine obstetric care, as well as through the transition to parenthood as part of their primary care medical home. A “medical home” is a widely accepted

model of primary care in the United States that is patient-centered, team-based, coordinated, and comprehensive (Primary Care Collaborative, 2021). Perinatal mood and anxiety disorders affect up to 20% of women in the United States (Centers for Disease Control & Prevention, 2020) and rates are even higher among low-income populations and adolescent mothers (Katon et al., 2015;

Kingston et al., 2012). Maternal depression, anxiety, and stress are associated with a range of fetal and neonatal outcomes including preterm birth, low birth weight, and fetal growth restriction (Becker et al., 2016; Monk et al., 2012; Muzik & Borovska, 2010). These same maternal mental health symptoms also increase the risk for adverse child developmental consequences that affect infant and early childhood mental health, including cognitive and behavioral issues, (Kingston, Tough & Whitfield, 2012; Gentile, 2017).

Early identification and treatment of mental health disorders, including perinatal depression, show potential to prevent adverse outcomes in children across all developmental stages (National Research Council & Institute of Medicine, 2009) and result in more favorable outcomes for expectant and postpartum women (Yogman, 2016). However, women continue to experience barriers that prevent them from seeking care. Women in the perinatal period are often afraid to disclose mental health concerns due to fear of stigma, losing parental rights, or being judged as unfit mothers (McIntosh, 1993; Grote et al., 2007; Byatt et al., 2013). Less than half of women who screen positive for depression during the perinatal and postpartum period will attend at least one mental health visit, and very few will remain in treatment (Smith et al., 2009). The integration of behavioral health services within medical homes is an optimal approach to improve the early identification and treatment of perinatal mental health disorders (Earls, 2010) as well as increase access and reduce barriers and stigma related to receiving mental healthcare.

While receiving obstetrical care, women are nearly four times as likely to follow up with mental health treatment when services are offered through their medical home, compared with external referrals (Smith et al., 2009). In contrast, when women are referred to mental health treatment outside of their medical home, there are high rates of attrition (Blount, 2013; Smith et al., 2009). Studies have found that behavioral healthcare integrated into outpatient obstetric settings increases the rate of mental health utilization and is effective in decreasing perinatal mental health symptoms (Moore Simas et al., 2018). Socially disadvantaged women may benefit even more from integrated behavioral healthcare, as one study showed a larger decrease in depressive symptoms for women with no insurance or public insurance than for women with private insurance (Katon et al., 2015). Unfortunately, during the COVID-19 pandemic, the continuity of care within the medical home has been profoundly disrupted.

The COVID-19 pandemic has negatively impacted the psychosocial support and mental health of people throughout the world. There has been an increase in unemployment, family isolation, and stress. The abrupt economic shut-down and stay-at-home orders early in the pandemic led to a four-fold increase in the unemployment rate in the

United States, from 3.8% to 13%, an increase that surpasses that seen during the Great Recession in 2010 (Kochhar, 2020). Even with eventual state and federal protections, the eviction rates in the United States have continued to increase. According to an analysis of US Census Bureau data, it is estimated that 30–40 million Americans are at risk for eviction, likely making this the most severe housing crisis in US history (Benfer et al., 2020). Unemployment has led not only to financial stress but has also increased isolation for families at home. Accounting for seasonal trends, recent data has shown an increase in domestic violence calls by 7.5% during March through May 2020. Even more concerning, this increase was driven by households without a history of recent domestic violence (Leslie & Wilson, 2020). Job loss associated with the pandemic has also increased risk for psychological maltreatment and physical abuse towards children (Lawson et al., 2020).

Subsequently, the COVID-19 pandemic led to an increase in rates of maternal mental health symptoms while, at the same time, disrupting needed mental health services. Early in the pandemic, a rapid response survey highlighted a considerable increase in the probability of maternal depression and anxiety during pregnancy and the first-year postpartum (Davenport et al., 2020). These results were duplicated in many studies throughout the world as the pandemic unfolded, including a study in Italy showing the COVID-19 outbreak had a moderate to severe psychological impact on pregnant women (Saccone et al., 2020) and in China where women were found to have high rates of posttraumatic stress symptoms related to the pandemic (Liu et al., 2020). A cross-national study on the impact of COVID on perinatal women, which included responses from women across 64 countries, found a significant percentage of women had symptoms of PTSD and anxiety/depression (Basu et al., 2021). Despite the higher incidence of symptoms, the World Health Organization (2020) reported that mental health services were interrupted or halted in 93% of countries, and that 61% of countries reported a decrease in mental health services targeted specifically toward perinatal women. Given the increase in the psychosocial and mental health burden during the pandemic, integrated mental health care focused on serving at-risk populations, like pregnant and postpartum women, has become even more crucial. During the COVID-19 pandemic, the healthcare system has been forced to adjust how patients are triaged, evaluated, and treated. Health care facilities in the United States have added COVID-19 screening questions at entry points and at some facilities, if accompanied by children or other family members without an appointment, patients are not permitted entry. These changes affect access to mental health treatment, particularly in medical settings with integrated behavioral health services. While

outpatient visits declined substantially early in the pandemic, the Centers for Disease Control and Prevention (2020) recommended that women continue to attend antenatal visits and the American Academy of Pediatrics (AAP) advocated for prioritization of in-person infant and young children visits (Korioth, 2020). Both the American College of Obstetrics and Gynecology (ACOG) (2020) and AAP (2021) recognize the importance of sustained perinatal health assessment and treatment. During this unprecedented time, modifying established integrated behavioral healthcare to allow for continued follow-up and treatment during the perinatal period is of utmost importance for this at-risk population.

Telehealth services, including psychiatry and psychotherapy, have been shown to be effective in the treatment and assessment of a number of different psychiatric disorders across diverse populations (child, adolescent, adult, geriatric). Studies have found that telehealth mental health treatment results in outcomes that are comparable to in-person services, while increasing access to care, and these services may be particularly beneficial for populations who do not have access to local in-person services (Langarizadeh et al., 2017; Hilty et al., 2013). The integration of telepsychiatry services into primary care has also been shown to be effective in the treatment of mental health disorders within medical clinics (Hilty et al., 2013). Telehealth provides the opportunity to continue quality assessment and treatment of maternal mental health within the medical home while maintaining the safety of both healthcare workers and the vulnerable populations they serve. It allows clinics to preserve continuity of care and to provide needed behavioral health supports to patients at a particularly distressing time in history.

Prior to the pandemic, the two clinics described in this article had established integrated behavioral health services. The HEART (Healthy Expectations Adolescent Response Team) program is an integrated behavioral health program embedded in the Young Mothers Clinic, a dyadic medical home for postpartum adolescent mothers and their children, where mothers are seen with their infants during routine well child visits. The PROMISE (Perinatal Resource Offering Mood Integrated Services and Evaluation) Clinic is an integrated obstetric behavioral health program that provides care to women during the perinatal period (pregnancy through 6 months postpartum). Historically in both clinics, women were seen in-person during their routine medical visits by integrated behavioral health clinicians to address perinatal mood concerns. This paper describes the rapid transition from in-person to telehealth services and examines the impact of these changes on service utilization in two integrated perinatal settings.

2 | METHODS

2.1 | Study setting: HEART

The HEART program is a behavioral health program embedded in the Young Mothers Clinic, a dyadic medical home for adolescent postpartum women under the age of 25 and their children. The Young Mothers Clinic is housed at Children's Hospital Colorado and is a program in the Division of General Pediatrics at the University of Colorado School of Medicine. Since 1997, all patients have been enrolled into an Institutional Review Board approved research program that collects clinical data obtained during medical visits. HEART serves a racially and ethnically diverse patient population, with over 85% of patients publicly insured; public insurance is available to low-income individuals and families whose income is below federally set guidelines. In the last year, the Young Mothers Clinic provided nearly 6000 visits to 1800 patients. Approximately 20–30 newborns and their mothers are enrolled in the Young Mothers Clinic each month, for a total of 250–360 new dyads annually. For the purpose of the current study, data were only included for adolescent women who were up to 6 months postpartum during the study period.

2.2 | Integrated behavioral health model: HEART

Beginning in 2011, the HEART program, an integrated behavioral health model, was developed in the Young Mothers Clinic and all mental health services were provided within the context of the clinic (Ashby et al, 2016). All patients are universally screened for mental health, behavioral, and developmental concerns. Adolescent patients are screened with the Adverse Childhood Experiences scale (ACEs) within the first month postpartum and the Edinburgh Postnatal Depression Screen (EPDS) at their and their babies' visits until their babies are 6 months old (Cox et al., 1987; Cox & Holden, 2003; Felitti et al., 1998). Outside of this interval, adolescent patients are screened with the Patient Health Questionnaire-9 (PHQ-9) (Kroenke et al., 2001). Children are also screened with the Ages and Stages Questionnaire-3 (ASQ-3) (Squires & Bricker, 2009). The ASQ-3 is a series of 21 parent-completed questionnaires designed to screen the developmental performance of children in the areas of communication, gross motor skills, fine motor skills, problem solving and personal-social skills. This screener has high validity and reliability as demonstrated through detailed psychometric studies and can be completed in 10–15 min, making it well suited for a well-child visit (AAP, 2001). Families also complete psychosocial screening at all well visits that assesses

TABLE 1 Screening tools

Name of screen	Symptoms assessed	Number of items	Cut off score	Clinic used in
Edinburgh Post Natal Depression Scale (EPDS) (Cox, Holden & Sagovsky, 1987; Cox & Holden, 2003)	Antenatal and postnatal depression	10	10	HEART, PROMISE
Patient Health Questionnaire (PHQ-9)	Depression	9	9	HEART, PROMISE
Psychosocial Screener (Buchholz et al., 2021)	Psychosocial stressors	14	1	HEART
Generalized Anxiety Disorder Screener (GAD-7) (Spitzer, Kroenke, Williams & Lowe, 2006)	Anxiety	7	7	PROMISE
Mood Disorder Questionnaire (MDQ) (Hirshfield et al., 2000)	Bipolar Disorders type I, II, cyclothymia, and unspecified bipolar disorder	13	7 or more symptoms have occurred in the same period of time and cause moderate to severe problems	PROMISE
Adverse Childhood Experiences Scale (ACE) (Felitti et al., 1998)	Trauma exposure prior to age 18	10	No cut off. Increasing scores indicate more traumatic events	PROMISE
Benevolent Childhood Experiences Scale (Narayan, Rivera, Bernstein, Harris & Lieberman, 2018).	Positive experiences prior to age 18	10	No cut off. Increasing scores indicate more positive experiences	PROMISE

for resource needs, safety concerns including interpersonal violence, and mental health concerns (see Table 1).

Integrated behavioral health consultation in HEART prior to the pandemic occurred face-to-face with patients and their families in the medical exam room as a routine component of medical visits. Behavioral health clinicians (BHCs) provided mental health support to adolescent mothers in response to elevated mental health screeners, patient report, or provider concern. BHCs offered developmental and behavioral interventions for identified concerns and elevated screenings on child development measures. Additionally, BHCs offered anticipatory guidance on development to families with newborns to 3-year-olds as part of the HealthySteps prevention program (Guyer et al., 2003). Face-to-face consultation and communication with medical providers contributed to BHC's seamless implementation of integrated services during well child checks, follow up visits, and sick visits. Patients desiring mental health treatment beyond in-clinic consultation accessed co-located psychotherapy and psychiatry services by HEART BHCs, which was physically located in a consultation room beside the exam rooms in the medical pod (Ashby et al, 2016).

While there were many benefits and advantages to BHCs sitting in the same physical space as the medical providers and conducting services in-person within the medical home, families also experienced barriers that prevented their consistent engagement in behavioral health services. For example, the no show rate to medical visits in the

Young Mother's Clinic prior to the pandemic was 22%. Patients frequently reported barriers to attending appointments in person, including lack of transportation and lack of childcare.

2.3 | COVID-19 adaptations: HEART

As the pandemic spread across the United States, in mid-March 2020, changes to protocols and procedures were rapidly implemented in HEART, as well as to the clinic and the entire hospital system. It is beyond the scope of this paper to detail changes made to the entire medical clinic and hospital system; however, many of those changes impacted the BHCs workflow and access to providing consultation to patients. For example, scheduling changes were made which resulted in adjustments to medical providers' schedules, rescheduling of many patients, in addition to adaptations in patient screening protocols required prior to entering the building. Therefore, patients who arrived for their scheduled appointment were sometimes told to return home and reschedule due to failed screening or having children with them who did not have an appointment. At the onset of the pandemic and amid these hospital-wide changes, the behavioral health team focused on outreach to families who were not coming to their clinic appointments. Thus, the behavioral health team increased calls to families who had been previously identified as having behavioral health concerns, in

addition to implementing new strategies for consulting with the patients who were still coming into clinic for their appointments.

Throughout the pandemic, HEART services have been repeatedly modified as information about COVID-19 and state and city public health regulations shifted within the United States. With the initial pandemic changes to clinic procedures, the number of providers sitting in the provider workspace had to decrease to comply with physical distancing. All providers who could conduct their work with patients without physically being in the exam room were encouraged to do so. Initial changes to the care model thus involved all BHCs moving upstairs to a different workspace and calling into exam rooms to perform consultative services. Shortly after these changes were implemented, all scheduled psychotherapy and psychiatry services shifted to telehealth, conducted using a HIPAA (Health Insurance Portability and Accountability Act of 1996)-compliant video service embedded into the electronic medical record (EMR). HIPAA is a federal law in the United States that required the creation of national standards to protect sensitive patient health information from being disclosed without the patient's consent or knowledge.

Prior to this rapid shift to telehealth, BHCs had no experience delivering services via this modality. Thus, while completely overhauling the workflow, the BHCs simultaneously created policies and procedures to ethically provide telehealth services to patients. Protocols were quickly created related to risk assessment and safety concerns while providing these services. Issues related to confidentiality and other ethical concerns were also discussed, since telehealth services increased exposure to the home environment, including exposure to the behavior of others in the home. Policies and procedures were also created related to the limits of the BHC's ability to conduct a session related to the patient's whereabouts (i.e., patient out of state or patient driving at the time of the session).

Currently, 1 year into the pandemic, processes are working much more smoothly. HEART now has iPads in each exam room and BHCs join medical visits via iPad from the upstairs workspace. Conducting consultation via video is much more conducive to building connections and engagement with families than telephone. Given that BHCs continue to work from a different workspace than the medical providers due to physical distancing protocols, a secure chat function in the EMR is utilized to communicate with providers throughout the clinic session regarding patient needs, follow up, and workflow. BHCs continue to work on site in case in-person consultation is indicated (with appropriate personal protective equipment), such as when another iPad is being used during the visit for interpretation services or for risk assessment, crisis management, significant behavior or developmental concerns, or

IT/connectivity issues. Telehealth visits are continuing to be utilized for all psychotherapy and psychiatry appointments, as well as for certain medical visits.

2.4 | Study setting: PROMISE clinic

The PROMISE Clinic is an integrated behavioral health program that serves women who are pregnant and up to 6 months postpartum. It is housed in the obstetric and midwifery clinics at UHealth, an affiliate of the University of Colorado School of Medicine, and is a program in the Department of Obstetrics and Gynecology. Since 2010, all PROMISE patients have been enrolled in an Institutional Review Board approved research program that collects clinical data obtained during pregnancy and post-delivery. The PROMISE Clinic serves a socioeconomically, racially, and ethnically diverse patient population. In the last year, the combined prenatal clinics provided nearly 40,000 obstetric visits and delivered the babies of approximately 3500 women.

2.5 | Integrated behavioral health model: PROMISE clinic

Prior to 2019, the PROMISE Clinic operated as a co-located behavioral health program, meaning that women were identified as having mental health concerns during their prenatal or postpartum visits, and then referred to schedule a separate mental health appointment. Beginning in 2019, the care model transitioned to integrated care, with patients able to be seen for mental health services during their obstetric visits. As part of the larger obstetric setting, including several obstetric clinics, midwifery clinics, and a high-risk clinic, all pregnant patients are universally screened for depression using the Edinburgh Postnatal Depression Scale (Cox, Holden & Sagovsky, 1987; Cox & Holden, 2003) at the first prenatal visit, immediately after delivery, and at the postpartum visit. At other visits, patients are screened with the Patient Health Questionnaire-2. Once enrolled in PROMISE for ongoing mental health treatment, patients are screened with the Mood Disorder Questionnaire (Hirshfield et al., 2000), Adverse Childhood Experiences Scale (Felitti et al., 1998), Benevolent Childhood Experiences Scale (Narayan et al., 2018) and the Generalized Anxiety Disorder-7 (Spitzer et al., 2006) (see Table 1).

Prior to the pandemic, integrated BHCs sat in a separate work room in proximity to medical providers from the five obstetric practices served by PROMISE. Medical providers consulted with BHCs face-to-face in clinic or via paging the PROMISE team. Consultation was done with

patients in the exam room during obstetric and postpartum visits. Patients were identified by self-reported mood concerns, an elevated EPDS or PHQ-2 (Gilbody et al., 2007), or patients identified by the PROMISE team via chart review with a history of mental health concerns, high risk social situation, history of fetal loss, or pregnancy complications/high risk pregnancy that put women at increased risk for perinatal mental health disorders. For patients desiring mental health treatment beyond consultation, the PROMISE clinic offered in-person psychotherapy and psychiatry services within the obstetric practices. Similar to HEART, barriers, including lack of childcare and transportation, prevented a number of women from engaging in PROMISE services, as indicated by patient report and provider referrals to social work for resource needs.

2.6 | COVID-19 adaptations: PROMISE clinic

In the PROMISE Clinic, given concerns about the impact of COVID on pregnant women, the transition to telehealth occurred even more rapidly than in HEART. Over one weekend, all scheduled PROMISE appointments were rescheduled as telehealth appointments, conducted using a HIPAA-compliant video service embedded into the EMR. All patients had been given instructions and informed of the change. Similar to HEART BHCs, PROMISE BHCs had no prior experience delivering telehealth services, and so had to simultaneously provide care via telehealth while also developing protocols for providing ethical, safe, confidential mental health treatment over video.

Due to the large clinic size and volume, as well as lack of physically distant workspace, only one PROMISE BHC was permitted on site per clinic session and the remaining PROMISE BHCs had to transition to working remotely from home. Consultation and outreach to patients shifted to telephone and was often scheduled separately from patients' obstetric appointments. Due to the barriers in utilizing in-clinic consultation and the importance of decreasing patient exposure and risk to the virus (i.e., related to extended visit lengths and contact with multiple providers in small exam rooms), medical providers began utilizing EMR referrals to PROMISE for all patient concerns, which pre-COVID, had been designated only for patients interested in co-located psychotherapy or psychiatry services.

Over time, the PROMISE clinic continued to modify its new workflow and communication strategies with providers to preserve the integrated behavioral health services offered to patients. Due to the PROMISE clinic serving five obstetric and midwifery practices and a larger clinic population than Young Mothers Clinic, video consultation via iPads in exam rooms was not an option for the

modified workflow. Secure chats embedded in the EMR became a safe, efficient way to consult with providers on patients being seen each day, and in-person consultation continued to be provided (with appropriate personal protective equipment) for patients who were difficult to reach by phone or patients with mental health emergencies (i.e., risk assessments for suicidality, severe mental health symptoms, etc.).

2.7 | Data analysis

Descriptive analyses of participant race and ethnicity, age, number of pregnancies, other demographic data, and patient utilization characteristics were reported using means, ranges, and proportions. Please note that in the hospital's EMR, "race" and "ethnicity" are used to capture distinct demographic data. The authors acknowledge that "race" is a term more widely used in the United States and solely use this term to refer to demographic data as it is categorized in the EMR. Comparison of pre-COVID and during COVID populations were analyzed using chi squares for categorical variables and t-tests for continuous variables. Data was gathered using retrospective chart review from patients' electronic medical records.

3 | RESULTS

3.1 | HEART

3.1.1 | Pre-COVID demographics

Between September 1, 2019 and February 29, 2020, 33 perinatal adolescent mothers, who were up to 6 months postpartum, were seen by HEART BHCs. Participants were ethnically diverse with 27.3% White, 24.2% Black, 36.4% Other, 3% Asian Pacific Islander, and 3% More than one race. More than half of patients (57.6%) identified as Hispanic. Languages spoken during behavioral health contacts include English (81.8%), Spanish (15.2%), and Somali (3.0%). Resource concerns were identified by 17% of patients and 81.8% were publicly insured or uninsured.

3.1.2 | COVID demographics

Between April 1, 2020 and September 30, 2020, 41 perinatal adolescent mothers, up to 6 months postpartum, were seen by HEART BHCs. Participants were ethnically diverse with 34.1% White, 19.5% Black, 36.6% Other, and 7.3% More than one race. More than half (56.1%) identified as

non-Hispanic. Languages spoken during behavioral health contacts include English (90.2%), Oromo (2.4%), and Spanish (7.3%). Resource concerns were identified by 22% of patients and 85.4% were publicly insured or uninsured.

3.1.3 | Pre-COVID screening and utilization of services

Prior to COVID and during the 6-month study period, there were a total of 77 patient contacts. Fifty-three of these were scheduled mental health appointments and the remainder were consults that occurred during their or their baby's medical visits. The top three primary reasons that providers referred patients for behavioral health services were current mental health symptoms for patients with past histories of mental health issues (79.8%), pregnancy related mood concerns for patients with newly identified mental health symptoms (10.4%), and none (8.3%). The rate of missed or canceled behavioral health appointments was 56.2%.

3.1.4 | COVID screening and utilization of services

During COVID and during the 6-month study period, there were a total of 90 patient contacts. Fifty-nine of these were scheduled mental health appointments and the remainder were consults that occurred during their or their baby's medical visits. The top three primary reasons for referral were current mental health symptoms for patients with past histories of mental health issues (70.3%), pregnancy related mood concerns for patients with newly identified mental health symptoms (13.5%), and none (8.1%). The rate of missed or canceled behavioral health appointments was 57%.

3.1.5 | Comparisons

There were no statistically significant differences in the distribution of race and ethnicity groups, non-English speakers, or Medicaid status. The COVID group was significantly older than the pre-COVID group (20 vs. 18.5, $P < .001$). There were no statistically significant differences in the presenting problems, or the types of services provided prior to versus during COVID study periods. Although the overall number of visits increased during COVID, the percentage of scheduled appointments that were completed did not significantly differ prior to versus during the COVID study periods.

Please see Table 2 for additional details regarding HEART demographics and service utilization.

TABLE 2 HEART visit data mothers

	PreCovid (n = 33)	During Covid (n = 41)
Demographics		
Age	18.5 (15–22)	20 (16–24)**
Race		
White	9 (27.3)	14 (34.1)
Black	8 (24.2)	8 (19.5)
Other	12 (36.4)	15 (36.6)
Asian/Pacific Islander	1 (3.0)	0
More than one race	1 (3.0)	3 (7.3)
Unknown	2 (6.1)	1 (2.4)
Ethnicity		
Hispanic	19 (57.6)	16 (39.0)
Non-Hispanic	13 (39.4)	23 (56.1)
Unknown	1 (3.0)	2 (4.9)
Insurance		
Public	26 (78.8)	31 (75.6)
Uninsured	3 (3.0)	4 (9.8)
Language		
English	27 (81.8)	37 (90.2)
Oromo	0	1 (2.4)
Spanish	5 (15.2)	3 (7.3)
Somali	1 (3.0)	0
Service utilization		
Patient contacts	77	90
Consults (in person)	11 (14.3)	31 (34.4)
Scheduled mental health appointments	66 (85.7)	59 (65.6)
Psychotherapy	46	48
Medication	18	11
Psychotherapy and medication	2	0
<i>Presenting problem during consultation</i>	<i>N = 48</i>	<i>N = 37</i>
Mental health concerns	34 (79.8)	26 (70.3)
Pregnancy related mood concerns	5 (10.4)	5 (13.5)
None	4 (8.3)	3 (8.1)
Missed/cancelled appointment rate	56.2%	57%

** $P < .001$.

3.2 | Promise

3.2.1 | Pre-COVID demographics

Between September 1, 2019 and February 29, 2020, 397 patients were seen by PROMISE BHCs. Participants were ethnically diverse with 45.9% White, 25.4% Black, 22.7%

Other, 3% Asian Pacific Islander, and 2.5% More than One race. 20.7% identified as Hispanic. Most patients (65.2%) were married or lived with their partner and were publicly insured (58.4%). One-third were first time mothers (35.3%) and over half (52.6%) had no medically diagnosed pregnancy concerns. Most patients were identified and referred to PROMISE in pregnancy, with only 6.3% of patients referred in the post-partum period.

3.2.2 | COVID demographics

From April 1, 2020 and September 30, 2020, 798 patients were seen by PROMISE BHCs. Participants were ethnically diverse with 55.4% White, 20.1% Black, 16.3% Other, 3.1% Asian Pacific Islander, and 3.5% More than One race. 25.9% identified as Hispanic. Less than half of patients were married or lived with a partner (47.55%). 52.8% of patients were publicly insured and 37.1% were first time mothers. 66% had no medically diagnosed pregnancy concerns. Most patients were identified and referred to PROMISE in pregnancy, with only 4.1% referred in the post-partum period.

3.2.3 | Pre-COVID screening and utilization of services

Prior to COVID and during the 6-month study period, there were a total of 883 patient contacts. One hundred and twenty-five of those were psychological or psychiatric evaluations. The remaining visits were split nearly equally between scheduled therapy or medication visits (359) and consultation as part of patients' prenatal care (394). Primary reasons for referral were current mental health symptoms (40.1%), history of mental health disorders (26.1%), and relationship problems (16.5%). The rate of missed or canceled appointments was 49.5%.

3.2.4 | COVID screening and utilization of services

During the 6-month study period, there were 2610 patient contacts. One hundred and forty-nine patient contacts were psychological or psychiatric evaluations. There were 1306 telephone calls, 776 scheduled telehealth patient visits, 609 consults, and 47 group contacts. Primary reasons for referral were current mental health symptoms (44.9%), history of mental health disorders (37.70%), and relationship problems (5.8%). The rate of missed or canceled appointments was 27.8%

3.2.5 | Comparisons

There were no statistically significant differences in the mean ages or insurance status among PROMISE patients prior to and during COVID. The percentage of patients that identified their racial/ethnic group as Black was significantly lower during COVID compared to prior (20.1% vs. 25.4%, $P = .034$), while the percentages of those identifying as White race and Hispanic ethnicity were significantly higher over the same time period (White race: 55.4% vs. 45.9%, $P = .002$ and Hispanic ethnicity: 26.0% vs. 20.6%, $P = .038$). The overall number of patients seen by PROMISE during COVID was nearly twice the number seen prior to COVID (798 vs. 397) and the number of patient contacts was almost three times as many (2610 vs. 883). At the same time, the percentage of missed appointments significantly decreased during COVID compared to prior to COVID (27.8% vs. 49.5%, $P < .0001$). The stated reason for PROMISE referrals demonstrated significant differences between the two groups with a higher percentage of women presenting with current symptoms (44.9% vs. 40.1%) or a mental health history (37.7% vs. 26.1%) during COVID, while a lower percentage of patients cited family conflict during COVID (5.8% vs. 16.5%). These differences were statistically significant at a P value less than .0001.

Please see Table 3 for additional details regarding PROMISE demographics and service utilization.

4 | DISCUSSION

Perinatal women frequently attend obstetric and subsequently pediatric appointments, creating a unique opportunity to screen, assess, and treat perinatal mood disorders within medical visits (Earls, 2010). Establishing medical homes that incorporate mental health care into obstetric and mother-baby clinics optimizes the possibility that women will participate in mental health services (Smith et al., 2009). Furthermore, integrated behavioral health services have been shown to be effective in decreasing mental health symptoms (Moore Simas et al., 2018). The PROMISE Clinic and HEART utilized these traditional models of integrated behavioral healthcare prior to COVID-19 changes with good success.

The early stages of the COVID pandemic were marked by significant and sweeping changes, including abrupt adaptations to health care delivery, necessary to ensure the highest safety measures for patients and staff. Although conversion to virtual technology for business and some medical environments was assumed to maintain ongoing productivity and efficacy, its successful use in perinatal mental health care was less clear. As the field of

TABLE 3 PROMISE visit data

	<i>Pre-Covid</i> (<i>n</i> = 397)	<i>During Covid</i> (<i>n</i> = 798)
Demographics		
Age	27.8 (range 16–43)	27.9 (range 14–45)
Race		
White	182 (45.9)	442 (55.4)*
Black	101 (25.4)	160 (20.1)*
Other	90 (22.7)	130 (16.3)
Asian/Pacific Islander	12 (3)	25 (3.1)
More than one race	10 (2.5)	28 (3.5)
American Indian/Alaska Native	2 (.5)	6 (.75)
Ethnicity		
Hispanic	82 (20.6)	207 (26.0)*
Non-Hispanic	315 (79.1)	586 (73.4)
Unknown	NA	5 (.6)
Insurance		
Public	232 (58.4%)	421 (52.8)
Relationship status		
Married/Living together	259 (65.2)	379 (47.5)
Dating	66 (16.6)	124 (15.5)
Single	42 (10.6)	262 (32.8)
Not specified	30 (7.5)	27 (3.4)
First pregnancy	140 (35.3)	238 (29.8)
No diagnosed pregnancy complications	209 (52.6%)	555 (68.9)
Service utilization		
Patient contacts	883	2610
New patient appointments	125 (14.2)	149 (5.7)
Consults (in person)	394 (44.6)	88 (3.4)
Consults (telephone)	NA	521 (20.0)
Telephone outreach	NA	810 (31.0)
Return patient appointments	359 (40.7)	776 (29.7)
Group therapy	NA	47 (1.8)
<i>Reasons for referral for intervention</i>	<i>N</i> = 631	<i>N</i> = 844
Current mental health symptoms	256 (40.1)	379 (44.9)**
History of mental health symptoms	165 (26.1)	318 (37.7)**
Family conflict	104 (16.5)	49 (5.8)**
Referred postpartum	25 (6.3)	32 (4.1)
Missed/cancelled appointment rate	49.5%	27.8%**

P* < .05.*P* < .001.

integrated perinatal mental health is a relatively new area, virtual modalities implemented over the past year were often established without historical data or evidence to guide best practices. This article demonstrates that over the last year, the PROMISE Clinic and HEART program were successful in utilizing a virtual platform at significant levels to deliver treatments for perinatal mood and anxiety disorders.

Several interesting questions and hypotheses emerged from the data comparing the clinics' traditional models prior to COVID and the virtual models utilized during the emerging COVID pandemic. Both clinics saw an increase in the number of visits provided over the 6-month span using virtual technology over in-person contacts. This was seen at a much greater extent in the PROMISE clinic. In addition, the PROMISE clinic noted a significant improvement in the percentage of patients successfully completing appointments, while the percentage remained unchanged in the HEART clinic. We suspect the drastic improvement in "show rate" for PROMISE is associated with improved flexibility in scheduling that a virtual model allowed. Use of the pre-COVID in-person model in PROMISE was more dependent on obstetric providers recognizing mental health issues and physically bringing a mental health clinician into the exam room for consultation. Limited office and clinical workspace for extended consultation or therapy sessions strained the workflow needed to maintain the busy obstetric clinic schedules. Implementation of the virtual platform eliminated space and time constraints in the clinic while a user-friendly messaging system within the EMR reduced these barriers to physician referrals. HEART, on the other hand, is a much smaller and less complex clinic for young mothers. Extensive mental health integration with an easy referral process was established long before COVID required virtual health implementation. The HEART show rate of nearly 50% was maintained after use of virtual technology. The unchanged show rate in the HEART program may be related to a number of factors, including the high frequency of in-clinic visits for newborns in the first 6 months of life, which creates additional touchpoints for patients to seek support from both medical and behavioral health providers; difficulty attending appointments due to the demands of caring for a newborn and adjusting to newborn sleep schedules; and barriers associated with low socioeconomic status including availability of WiFi, cellular devices, and privacy within the home, which are limitations of the telehealth service delivery model (Cole et al., 2019; Zhou et al., 2020; Humphry, 2019; Hargittai et al., 2019). An additional factor to consider regarding the increased show rate in PROMISE and maintained show rate in HEART is the potential impact of COVID-19 on different age groups. PROMISE serves a wider age range of patients (14–45 during COVID)

as compared with HEART (16–24 during COVID). One hypothesis is that more PROMISE patients experienced distress related to COVID-19 and it had a greater impact on their lives (i.e., changes to work, socialization, and family supports), which increased motivation to engage in mental health treatment. HEART patients, on the other hand, may not have experienced as much COVID related distress and they may have been more likely to continue engaging in pre-pandemic behaviors given that they are less likely to suffer severe COVID symptoms and when considering the impact of development and the adolescent brain on anticipation of risk. For example, one study, which surveyed over 700 adolescents in the United States, found that 68.6% of the study sample was not practicing “social distancing” (Oosterhoff & Palmer, 2020). Additionally, many HEART patients live with parents or extended family members, and so they may have experienced less change to their social support system during the pandemic than PROMISE patients experienced. HEART patients who did not show for HEART appointments were outreached by telephone and were prioritized by BHCs for in-clinic consultation at the patient or their baby’s next medical appointment to assess symptoms, functioning, and needs for treatment or additional support.

The differences seen in women utilizing PROMISE services during COVID raise additional interesting questions. The lower rate of service utilization by women identifying as Black in the PROMISE clinic during COVID may be related to differences in socio-economic status, as the PROMISE clinic serves a more diverse population of women from various socio-economic backgrounds than HEART, which serves mostly young women insured by Medicaid, which is only available to low-income individuals and families. Low socio-economic status creates barriers to accessing telehealth and telephone services from home, including unreliable phone or WiFi service, having a limited number of electronic devices, and/or having school-aged children at home engaged in remote learning (Cole, Pickard & Stredler-Brown, 2019; Zhou et al., 2020; Humphry, 2019; Hargittai et al., 2019). Another hypothesis may relate to a difference in trust among Black women with societal institutions, including medical and mental health care systems, during the time of COVID. The public outcry and demonstrations in the United States surrounding video footage of police brutality and the deaths of several Black Americans by police, including George Floyd, Breonna Taylor, and others, were well established during the COVID study period. It is possible that women of color were wary of connecting to the health care system beyond the necessities of their obstetric care, especially given that the PROMISE team is comprised of a majority of providers who identify as White. This finding is particularly important and further research is needed to best

treat and mitigate the effects of perinatal mental health symptoms on Black women and their infants, particularly during this time in history and in the context of telehealth services, given the alarming rates of Black maternal mortality (Singh, 2021) and increased risks of low birth weight and prematurity for Black infants in the United States (Ratnasiri et al., 2018). Important future directions for the PROMISE team to better engage Black perinatal women may include consultation with a community advisory board, the hiring of more Black providers, and partnerships with local organizations serving Black perinatal women, such as the Kindred Mamas Mentor Program at Children’s Hospital Colorado.

The differences in reasons for seeking PROMISE services prior to and during COVID may also be explained by stressors brought about by the pandemic. The nearly universal self-isolation imposed during the COVID pandemic is well recognized as a source of mental stress (Burtscher et al., 2020), in addition to the increased psychosocial stressors of job loss, eviction, family death and illness, and increased rates of interpersonal violence and child abuse (Kochhar, 2020; Benfer et al., 2020; Leslie & Wilson, 2020; Lawson et al., 2020). This could explain the increased percentage of women with active symptoms seeking help, which is also consistent with research done in Italy and China during COVID showing increased maternal distress during the pandemic (Saccone et al., 2020; Liu et al., 2020). At the same time, the isolation may have reduced the number and intensity of intimate interactions that people share with friends and family, reducing the number of opportunities for interpersonal conflict to develop. Future research involving qualitative methods may be helpful in identifying a perinatal population that can articulate attitudes and opinions to better describe why the differences in this study were seen.

Limitations to this study were recognized. The limited timeframe of the two study periods resulted in a small number of patients seen by HEART BHCs, which may have reduced the power necessary to identify differences in the populations studied. Since infants and their families are also seen by BHCs to promote healthy growth and development during frequent well child visits in the first 6 months of life, additional data related to BHC interventions with perinatal adolescents may be contained in infants’ medical charts. Although past mental health symptoms were identified as a reason for referral in both clinics, our database did not allow for more granular evaluation of specific diagnoses and symptoms; thus, limiting descriptive data on these populations. Heterogeneity in the PROMISE and HEART databases also prevented comparisons and analysis across these populations.

In conclusion, both benefits and limitations were evident in the rapid transition to a virtual service delivery

model for providing perinatal mental health services during the COVID-19 pandemic in two unique integrated medical clinics. Data from both clinics demonstrate that continuity of mental health treatment for perinatal women was able to be provided through virtual models of care. Higher attendance rates and overall increased patient contacts in the PROMISE clinic suggest that virtual mental health treatment offers flexibility and increased access for at least certain perinatal women, in addition to benefits for staff and to clinic flow in settings with limited physical space for patients and providers. Providing virtual services had a positive impact by limiting exposure to COVID for a vulnerable patient population and for staff. Additionally, all BHCs were able to maintain full caseloads and full-time employment despite restrictions related to working on site due to the ability to work remotely with the virtual model. Overall, telehealth has been a critical component in providing continuity of mental health treatment for perinatal women during the pandemic, which contributes to maternal well-being, healthy attachment and mother-infant bonding, and prevents adverse child development outcomes associated with untreated maternal mental health issues (National Research Council & Institute of Medicine, 2009; Yogman, 2016).

Areas of concern regarding the virtual service delivery model based on our program data and clinical experiences include lower rates of mental health engagement by Black perinatal women in the PROMISE clinic during the pandemic, psychosocial and technological barriers, issues with privacy, and potential changes to observations/dynamics during mental health sessions. As previously mentioned, further studies should continue to examine engagement in telehealth services across diverse populations, as well as needed efforts within our programs specifically to examine overall engagement by Black perinatal women. Virtual models of care provide flexibility and accessibility, but only for those with the required technological devices and stable, secure internet connections, and even then, issues with connectivity for both patients and providers commonly disrupt therapy sessions due to outages, overuse, etc. Depending on the patient's family support and housing situation, mental health treatment may not be as private or focused as an in-person therapy session and the content of sessions may be limited by these factors.

Virtual mental health treatment can potentially provide increased opportunities for BHCs to observe family interactions, including interactions between mothers and their babies and/or other children; however, many women use their cell phones or tablets for their virtual visits and this small screen often limits the ability to observe parent-child interactions. When seen in person, patients typically brought their infants with them due to lack of child-care, but with telehealth, patients often scheduled sessions

during their baby's naptime in order to focus on therapy. This precludes clinical observations of relationships and attachment, and when infant mental health concerns arose, BHCs had to specifically request that the baby participate in the visit. This also potentially led to fewer spontaneous opportunities for reflection on the mother-infant bond. Thus, it is important to consider both the advantages and limitations of a virtual model of mental health treatment when addressing the mental health needs of perinatal women to optimize engagement in effective treatment and thus promote maternal well-being, healthy bonding and attachment for mothers and babies, and infant mental health.


CONFLICT OF INTEREST

We have no conflicts of interests to disclose.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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