



## Perinatal Anxiety and Depression During COVID-19

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### ABSTRACT

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The novel coronavirus disease 2019 (COVID-19) outbreak places perinatal women at higher risk of developing anxiety and depression. Uncertainty, fear, and confusion in medical, social, economic, occupational, and political aspects of life in the United States add to existing stressors that perinatal women experience. To optimize the quality of perinatal care during the pandemic, appropriate mental health interventions must be implemented to prevent and alleviate perinatal anxiety and depression and improve maternal and infant outcomes. Measures include increased screening, nonpharmacologic and/or pharmacologic interventions, and the use of telehealth for care delivery.

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### Introduction

Pregnancy is a complex and dynamic experience during which women go through drastic physiological and psychological changes. These changes often place perinatal women at increased risk of developing anxiety and depression.<sup>1</sup> Approximately 20–30% of women worldwide experience at least 1 psychiatric disorder during pregnancy or postpartum.<sup>2</sup> About 13–21% of prenatal and 11–17% postpartum women experience anxiety and depression.<sup>3,4</sup> Perinatal anxiety and depression (PAD) are associated with existing or a history of mental health conditions, marital discord, stressful life events or environments, lack of social support, low socioeconomic status, and the general fear or diagnosis of adverse pregnancy outcomes such as miscarriage, preterm delivery, low birth weight, and adverse maternal health conditions.<sup>4</sup>

In addition to stressors that place perinatal women at risk for PAD, the current global pandemic of severe acute respiratory syndrome coronavirus 2 (SARS-CoV2) has the potential to increase the incidence of PAD. SARS-CoV2 is a novel coronavirus that causes coronavirus disease 2019 (COVID-19). Cases from the outbreak were first identified in Wuhan, China, in late 2019, and the outbreak was classified as a pandemic by the World Health Organization on March 11, 2020.<sup>5</sup> SARS-CoV2 attacks lung cells through various entry points. In adults, the invasion of the virus triggers the host's immune response and initiates the body's protective mechanisms but may still lead to severe respiratory distress syndrome.<sup>6</sup> COVID-19 can also attack angiotensin-converting enzyme-2 receptors located in vascular, renal, and gastrointestinal cells.<sup>6</sup> The most common clinical presentations of COVID-19 includes fever, fatigue, shortness of breath, and dry cough; however, gastrointestinal, cardiac, and renal systems symptoms may also occur.<sup>7</sup> As of October 26, 2020, the total number of deaths in the US was 230,796 and approximately 8,929,738 have been infected.<sup>8</sup>

Pregnant women are more susceptible to respiratory infections; therefore, influenza vaccines are highly recommended during flu season.<sup>9</sup> During pregnancy, women experience a normal physiological response of decreased pulmonary capacity and immunosuppression and thus may be at greater risk for poor outcomes from COVID-19 infection.<sup>7</sup> Even though only 16 deaths among pregnant or postpartum women have been identified in the United States, many cases of the infection have been recorded with some resulting in severe illness, emergency cesarean deliveries, and potential neonatal infection.<sup>7</sup> The fear of either acquiring the disease or the potential effects of the virus on the fetus or newborn may lead to heightened anxiety and depression in this population.

The current widespread outbreak of COVID-19 has been found to be associated with psychological distress and increased mental health symptoms, including depression, anxiety, and posttraumatic stress diagnoses in the general population, but especially so in females.<sup>10,11</sup> Moreover, public health organizations worldwide anticipate increased anxiety and depression rates and symptoms, especially in populations that are at increased risk for PAD, such as perinatal women.<sup>12</sup> Adverse effects of untreated PAD for mothers, infants, and families are well documented and include physical, emotional, social, cognitive, and financial effects.<sup>13</sup> Anxiety and depressive symptoms in mothers during pregnancy are associated with shorter gestation, low birth weight infants, and adverse fetal and child neurodevelopment outcomes.<sup>14</sup> Appropriate interventions are much needed to address PAD in the best of times, but especially in the wake of the COVID-19 pandemic. Because many perinatal women seek services in the primary care (PC) setting, PC providers, including nurse practitioners and nurse-midwives, may benefit from understanding the specific needs of this population, including the risk of exacerbated PAD in light of the current pandemic. This article provides information for PC providers on the increased risks for PAD and offers suggestions for

clinical modifications to meet the mental health needs of perinatal women during the SARS-COV-2 pandemic.

### Perinatal Anxiety and Depression During COVID-19

The aggressive and deadly nature of COVID-19 has caused a significant public mental health crisis in the United States.<sup>15</sup> The impact of the pandemic is becoming evident in social, economic, social, and political aspects of the United States. The uncertainty, fear, and high levels of stress around the crisis are leading to increased mental health issues. A recent Kaiser Family Foundation poll revealed that almost half of adults indicated a negative emotional impact of the pandemic due to worry, stress, and anxiety.<sup>16</sup>

Pregnant women may be more vulnerable and more prone to adverse mental health effects of such large-scale public health crises. A multicenter cross-sectional study was conducted in China in the early phase of the outbreak to examine the impact of COVID-19 on PAD.<sup>17</sup> A total of 4,124 pregnant women were screened with the Edinburgh Postnatal Depression Scale (EPDS) before and after the announcement of the COVID-19 pandemic in China. The comparison showed the participants had significantly higher rates of anxiety and depressive symptoms ( $P = 0.02$ ) after the announcement was made. Risk factors for perinatal anxiety and depression were identified in the study, including being less educated, having a low income, having poor family or social support, and a lack of physical activity. The results are consistent with other literature findings. New mothers in northeastern Italy also reported significantly higher EPDS scores and worsening depressive symptoms because of the fear of COVID-19 exposure and the quarantine measures during the pandemic.<sup>18</sup>

Another source of anxiety for pregnant mothers is fear of potential harm to the unborn child. Vertical transmission from mother to newborn during labor and birth has not been well documented, but it cannot be ruled out.<sup>19,20</sup> A recent case in France discovered the infectious SARS-CoV2 agent in placental tissue and neonatal nasopharyngeal swabs, leading the researchers to conclude that transplacental transmission most likely occurred.<sup>21</sup> Careful monitoring of all patients is recommended for delivery, with some hospitals testing all women upon admission.<sup>22</sup> If a woman is positive for COVID-19, isolation is recommended, and some suggest that neonates should be separated from infected mothers and caregivers to reduce transmission.<sup>22,23</sup>

Although necessary for infection control and based upon maternal health status, isolation immediately after birth may delay maternal infant attachment, suppress successful breastfeeding, and increase maternal fear and anxiety.<sup>9</sup> Some institutions are allowing breastfeeding of neonates by an infected mother if strict hygienic measures are adhered to, such as handwashing and wearing masks.<sup>24</sup> Preterm birth and intrauterine growth restriction are the most common adverse fetal events, but preeclampsia, cesarean delivery, and perinatal death are also higher in pregnant women with COVID-19.<sup>25</sup> However, there is some empirical statistical evidence that preterm births in the United States may actually be reduced during COVID-19, although further research is needed on this topic.<sup>26</sup>

The uncertainty around the features, symptoms, and treatments of the novel coronavirus and loss of supportive perinatal services causes elevated fear overall and concern for vertical transmission and adverse pregnancy outcomes.<sup>7</sup> Hospital tours and childbirth classes that have historically helped birthing parents assuage concerns stemming from unfamiliar surroundings and birth processes are now being canceled to maintain social distancing.<sup>27</sup> Nursing and medical staff from maternal and

newborn units are often reassigned to emergency departments and intensive care units to attend to patients with COVID-19, rendering perinatal units in some hospitals inadequate for care of non-COVID laboring and postpartum patients. All of these changes and uncertainties may lead to more fear, anxiety, and depressive symptoms in women who may already be at risk for PAD, and even cause otherwise low-risk women to have increased symptoms.

Furthermore, measures such as excluding birth partners from labor and birth, separating newborns from infected mothers in the immediate postnatal period, restricting breastfeeding, and emergent cesarean deliveries are common in perinatal care facilities in the attempt to control the risk of cross-infection.<sup>27</sup> This reduction in appropriate health care services, physical contact, and bonding time between parents and neonates is expected to intensify PAD symptoms in perinatal women.

To slow the spread of SARS-CoV2, governments worldwide have ordered different versions of lockdown. The abrupt changes to everyday life have brought on additional hardship and challenges for people in many ways. In the United States, staying home or “shelter-in-place” (SIP) orders are enforced inconsistently across the country. Nonessential businesses are closed, and many companies mandate remote work for employees; however, many lower-income workers are not able to work from home. The aftermath of the SIP order is causing massive temporary or permanent job loss. Unemployment rates reached as high as 14.7%, with 22,000,000 unemployed in April 2020; in August of that same year, the rate was 8.4%.<sup>28</sup> As a result, many experience financial, food, and housing insecurity as well as social isolation which increase the risk for intimate partner violence (IPV) and child maltreatment.<sup>29,30</sup> Current data, although limited, suggest that there has been increased reports and severity of violence against women or IPV during the COVID 19 outbreak.<sup>31,32</sup> Police reports collected in China during February 2019 compared with February 2020 revealed that IPV cases tripled during the lockdown.<sup>31</sup> Also, past epidemics such as ebola and zika resulted in increased incidences of IPV and violence against women.<sup>33</sup> Studies have shown that the COVID-19 pandemic can exacerbate the contributing factors for IPV such as general stress, low income, and lack of access to social networks and support.<sup>33</sup>

IPV is strongly associated with depression in perinatal women.<sup>34</sup> The culmination of all of these stressors and reduced ability to access usual coping strategies increase the risk for perinatal women developing PAD during the COVID-19 pandemic. Fathers are also at risk for PAD, and if their symptoms are untreated, there may be increased marital conflict and relationship disruption, which may further lead to increased incidences of IPV.

### Prevention

Because of the enormous shifts in society during the current pandemic, many perinatal women may not feel a connection to others or experience the usual rights of passage during the perinatal period such as therapeutic connection with health care providers, social interaction with other pregnant women, and family member celebrations. To mitigate this lack of connection, technology may be used to facilitate these human interactions. Group prenatal and postpartum care via telehealth may help provide social interaction and networking, as well as reduce mild PAD symptoms.<sup>35</sup> Providing education to perinatal individuals and their families on symptoms of PAD during pregnancy and the postpartum period may improve early detection and intervention rates as well as normalize screening.

**Table 1**  
Treatment of Perinatal Anxiety and Depression

Categories	Condition	Type of Intervention	Notes
Nonpharmacologic: professional intervention	Anxiety and depression	Cognitive behavioral therapy (CBT)	<ul style="list-style-type: none"> <li>- Talk therapy</li> <li>- Reframing ways of thinking</li> <li>- Improving coping skills</li> <li>- Change patterns of thinking and behaviors</li> </ul>
		Mindfulness-based CBT	<ul style="list-style-type: none"> <li>- CBT and meditation combination</li> <li>- Breathing techniques</li> <li>- Awareness skills</li> </ul>
Nonpharmacologic: client intervention	Anxiety and depression	Self-care	<ul style="list-style-type: none"> <li>- Support groups</li> <li>- Family support</li> <li>- Yoga</li> <li>- Meditation</li> <li>- Exercise</li> <li>- Adequate sleep</li> <li>- Nutrition and vitamins</li> </ul>
Pharmacologic therapy	Depression	Selective serotonin reuptake inhibitor (SSRI)	<ul style="list-style-type: none"> <li>- Sertraline (pregnancy and lactation)</li> <li>- Paroxetine (lactation only)</li> <li>- Fluvoxamine (pregnancy and lactation)</li> <li>- Less adverse effects and safer profile</li> <li>- May take 2–3 weeks for symptom improvement</li> </ul>
	Anxiety	SSRI	<ul style="list-style-type: none"> <li>- Sertraline (pregnancy and lactation)</li> <li>- Escitalopram (pregnancy only)</li> </ul>

## Intervention

Perinatal women experience hormonal, body image, sleep disturbances changes, and new roles as pregnant and a new mother. Many new mothers experience normal “baby blues” that occur within the first 2 weeks postpartum but some may develop more severe symptoms of PAD. Because the current pandemic may greatly increase the risk for perinatal fear, anxiety, and depression, enhanced services are warranted. Interventions to address perinatal mental health should remain a high priority when caring for pregnant and postpartum women. Interventions may include increased screening frequency, pharmacologic and non-pharmacologic treatments, and use of telehealth as a treatment delivery modality. If left untreated, PAD has immediate and long-term effects on partners, fetal outcomes, and child health.

## Screening

Consistent screening for perinatal mood and anxiety disorders has been identified as a priority during a public health crisis.<sup>17</sup> The American College of Obstetricians and Gynecologists (ACOG) recommends screening for PAD at least once during the perinatal period, and the American Academy of Pediatrics recommends incorporating the Edinburgh Postnatal Depression Scale into 1-, 2-, 4-, and 6-month well-infant visits.<sup>36</sup> Additionally, the US Preventative Services Taskforce has called for PAD screening, treatment, and referral; although screening frequency is not specified, it is listed it as a category B service, which requires insurance coverage.<sup>37</sup> Moreover, ACOG has acknowledged the need for increased screening and services for perinatal women due to emotional stressors encountered during the pandemic.<sup>38</sup>

Factors that improve screening outcomes were well documented by Long et al, who suggested several strategies.<sup>36</sup> Providing educational sessions on PAD to professionals who offer services to perinatal women improves screening rates and early intervention. Including information on suicide prevention, crisis intervention, treatment options, and screening techniques enhances provider confidence and likelihood of screening, treatment, or referral. Changes in the electronic health records system to provide a “pop-up” reminder to screen perinatal women further improves screening rates. Additionally, the use of simulation educational interventions for health care professionals using standardized

patients is another factor that improves screening, treatment, and ultimately improves maternal and child health.<sup>36</sup>

The most commonly used depression screening tools are the Patient Health Questionnaire (PHQ-9 and PHQ-2) and the Edinburgh Postnatal Depression Scale (EPDS).<sup>39</sup> PHQ9 and PHQ2 are a set of concise and self-administered or provider-administered tools for assessing depression with high sensitivity (88%) and specificity (88%) for major depressive disorders.<sup>39</sup> The PHQ2 contains the first 2 items of the PHQ-9 assessing the degree to which an individual has experienced depressed mood and anhedonia over the past 2 weeks.<sup>39</sup> Individuals who screen above the cutoff for the PHQ-2 should proceed to PHQ-9 and be further evaluated to determine whether they meet diagnostic criteria for depression. The PHQ incorporates *Diagnostic and Statistical Manual of Mental Disorders* (4th edition) depression criteria, as well as major depressive symptoms.

The EPDS is a questionnaire developed to detect postpartum depression (PPD) and has also been validated in prenatal populations. It is composed of 10 questions, and each question is given a score of 0 to 3 with maximum score 30. Any score 13 or above is likely to indicate PPD, and the individual should be evaluated further for diagnosis of depression. The EPDS focuses on 2 domains of negative affect, depressive symptoms and anxiety, and has a sensitivity rate of 90% and specificity rate of 90% at an optimal cutoff score.<sup>37,40</sup>

The PHQ-2 and PHQ-9 and the EPDS can be easily self-administered remotely and online or given by the provider. Both tools are available in a variety of languages. With utilization of the existing tools, providers may assume the role of advocate to prioritize increased screening frequency during the current pandemic to improve prevention and early intervention for improved outcomes for mother, infant, and family. Screening for bipolar disorder and substance use disorder must be included using validated tools such as the Mood Disorders Questionnaire and the CAGE-AID.<sup>12,41</sup> Prompt referral to a psychiatric care provider for results above the cutoff is required.

## Treatment

Standard of care guidelines for treatment of PAD include pharmacologic and nonpharmacologic interventions. Mindfulness-based cognitive group therapy, face-to-face cognitive behavior therapy (CBT) programs, Internet-delivered cognitive-behavioral

**Table 2**  
Modalities of Telehealth

Type of telehealth	Delivery format	Applications	Advantages and disadvantages
Videoconferencing, telephone	Synchronous	Primary care and obstetrics	Advantages: <ul style="list-style-type: none"> <li>- Immediate, clear, and accurate information in real time</li> <li>- Allows effective patient–physician verbal exchanges</li> <li>- Comparable health outcomes</li> <li>- Limited exposure to clinics/other patients and lower risk of COVID-19 infections</li> </ul> Disadvantages: <ul style="list-style-type: none"> <li>- Ethical concern of absence of face-to-face relationship or encounters</li> <li>- Limited physical examination</li> <li>- Requires quiet and private environment</li> <li>- Patient–physician relationship may be compromised</li> </ul>
Recordings (video and audio)	Asynchronous	Educational and support intervention	Advantages: <ul style="list-style-type: none"> <li>- Easy and flexible access to educational material</li> </ul> Disadvantages: <ul style="list-style-type: none"> <li>- No immediate resources for questions</li> </ul>
SMS (text messaging) Smartphone apps Online chats	Asynchronous	Educational and support intervention	Advantages: <ul style="list-style-type: none"> <li>- Effective and easier access to timely information and support</li> </ul> Disadvantages: <ul style="list-style-type: none"> <li>- Requires digital devices and Internet</li> <li>- Lacks human connection</li> </ul>

programs, and combined pharmacologic-psychological programs (medication and CBT) demonstrate similar improvements of anxiety and depression symptoms in the perinatal women.<sup>42</sup> Other treatment modalities that are reserved for severe cases of perinatal depression and are rarely used in primary care include repetitive transcranial magnetic stimulation or electroconvulsive therapy.<sup>43</sup> (See Table 1 for full list of treatment modalities.)

CBT is a type of psychological treatment that has been proven effective for a range of problems, including PAD. CBT involves efforts to change an individual's thinking and behavior patterns. On the basis of several core principles that psychological problems are partially based on faulty or unhelpful ways of thinking and learned patterns of unhelpful behavior, individuals can learn more effective ways of coping hence relieving symptoms.<sup>44</sup>

Mindfulness-based CBT (MBCT) focuses on mindfulness and meditation in addition to CBT interventions. MBCT is widely used and has been found effective in treatment of general depression and many other mental health problems.<sup>45</sup> It is essential for one to know the skills needed to cope with stress and emotional challenges, and the techniques used in MBCT are easy to learn and can be used in a variety of settings to reduce symptoms. By using meditation and breathing techniques, MBCT helps people become more aware of their mind, thoughts, and emotions, thus reducing symptoms of anxiety and depression and ultimately improving maternal, infant, and family health.<sup>45</sup> Psychiatric mental health nurse practitioners (PMHNP) and therapists can provide these services to groups or individuals.

In addition to psychotherapy, pharmacologic interventions are also useful in treatment of PAD. Anxiolytics, especially benzodiazepines, are rarely used in perinatal women because of the adverse effects to the fetus (preterm birth) and breastfed infant (sedation) from maternal use.<sup>46</sup> Selective serotonin reuptake inhibitors (SSRIs) are the main class of drugs in treatment for PAD in the PC setting because of their favorable adverse effect profile and overdose safety compared with tricyclic antidepressants which have a significant adverse side effect profile.<sup>47</sup> Pregnant and lactating women need special consideration in the use of medications because of risks to the fetus and infant. Careful consideration of the risks, benefits, expected outcomes, and alternatives to medication use must be included. Also, a single medication is favored over multiple medications during pregnancy and lactation to minimize exposure to the fetus or infant. Shared decision-making is recommended to assist perinatal women in making informed treatment choices.<sup>48</sup>

Although all SSRIs are excreted in breastmilk, some have a lower adverse effect profile than others. Among SSRIs, sertraline and paroxetine are the first-line medications recommended for breastfeeding mothers because of their minimal risk for infants.<sup>49</sup> Infant serum levels of sertraline and paroxetine are not detectable; in contrast, fluoxetine may be present in higher levels in breast milk and breastfed infants.<sup>50</sup> During pregnancy, sertraline or escitalopram is preferred because of a lower risk for adverse fetal effects and neonatal abstinence syndrome. However, paroxetine is not recommended because of the increased risk for teratogenicity in the first trimester and neonatal abstinence syndrome if used in third trimester.<sup>49,50</sup> PC providers should consider referral to a psychiatric care services if symptom improvement does not occur in approximately 8 weeks or if there are symptoms of psychosis, manic features, or suicidal ideation.<sup>51</sup> PMHNPs can provide talk therapy and consultation on medication use in coordination with primary care providers.

In some instances of severe postpartum depression or when SSRIs are not tolerated, brexanolone may be given IV, but this treatment requires hospitalization and is not given in primary care.<sup>52</sup> Although symptoms usually resolve within 2–5 days with brexanolone use, the side effect profile is considerable. Distribution in the United States is limited to registry enrollees, and the drug carries a “black box warning” because of the risk of loss of consciousness, sedation, and tachycardia.<sup>53</sup>

### Telehealth

The majority of primary care clinics in the United States have increased incorporation of telehealth in daily practice. Telehealth is a feasible alternative to in-person visits during infectious disease outbreaks such as COVID-19 because it reduces in-person interactions in clinics mitigating the risks of infection. The efficacy of telehealth has been evaluated and promoted for the perinatal population in synchronous or asynchronous formats.<sup>38</sup> Telehealth modalities may include synchronous or “real-time” health services through videoconferencing or telephone; asynchronous for delivery at a later time; or m-health, which involves health care messaging.<sup>38</sup>

Various telehealth modalities may be used, including short message service (SMS; “text messages”); mobile phone apps; videos for m-health; remote monitoring devices for asynchronous monitoring; and Internet-delivered interventions, such a video

**Table 3**  
Additional Resources for Maternal Mental Health

Name of Resource	Content	Webpage
The International Marcé Society for Perinatal Mental Health Marcé of North America	- Advocates for prenatal and postpartum mental health for mothers, fathers and infants. - COVID-19-related maternal mental health resources - Educational presentations, books, DVDs	<a href="https://marcesociety.com/">https://marcesociety.com/</a> <a href="https://marcesociety.com/regional-groups/marce-of-north-america">https://marcesociety.com/regional-groups/marce-of-north-america</a>
The Center for Women's Mental Health	- COVID-19 related maternal mental health resources - Maternal mental health/wellness program - Informative patient guides articles	<a href="https://womensmentalhealth.org">https://womensmentalhealth.org</a>
Postpartum Support International (PSI)	- Educational books, DVDs, brochures - PSI support groups - PSI guidebooks - State Perinatal Psychiatry Access Programs - Medication resources	<a href="https://www.postpartum.net">https://www.postpartum.net</a>

conferencing.<sup>54,55</sup> (See Table 2 for telehealth modalities.) Telehealth has been found to be effective in reinforcing positive health behaviors and remote monitoring (blood pressure and blood glucose in perinatal women) and, as a result, significantly reducing in-person medical visits.<sup>54</sup> Additional uses include reenforcing educational material on self-care to improve perinatal mental health.

Given the increased demand for mental health services and the reduced availability of in person medical services during the pandemic, the use of telehealth and digital mental health resources are a promising and feasible alternative. Additionally, the use of telehealth visits with PMHNPs or therapists can supplement care for these conditions by PC or obstetrical care providers and serve as a bridge between the two. Utilization of digital resources may also free up some PC providers to provide care for other more acute health conditions.<sup>55</sup> Because of the validation of mental health service delivery in other populations and the need to mitigate COVID-19 infection, the use of synchronous telehealth visits for mental health service delivery in the perinatal population may be a viable option.

However, the use of telehealth may not be an option for those who do not have access to broadband Internet, computers, or smartphones or those who do not know how to operate high-tech services or devices. The Federal Communications Commission estimates that more than 21 million US residents, especially in rural communities, do not have access to broadband Internet.<sup>56</sup> Despite government efforts to bridge the broadband gap, much work is still needed to provide Internet and telehealth access throughout the United States.<sup>56</sup> Lack of broadband Internet also means that many individuals may not have the ability to work remotely.

Lack of privacy for access to telehealth may be an additional barrier for perinatal women during SIP. Children and others may be at home during SIP, creating demands for care and limiting the ability to locate a quiet place for a telehealth visit. For those experiencing IPV, the ability to have privacy away from the perpetrator for a telehealth visit may be a source for discord in the relationship and further violence.<sup>57</sup>

Learning opportunities and access to all health care services may also be limited, which may lead to further isolation and mental health stressors. In efforts to alleviate these problems, some services may be provided by telephone. Telephones are much more readily available in US households and can serve as a reliable mode of telehealth, although both individual and the provider may not have as much information from telephone visits compared with video-conference telehealth visits. Healthcare providers must evaluate all the options available and utilize resources to maximize services for perinatal women to improve health outcomes. See Table 3 for a list of mental health resources for perinatal women.

## Summary

The COVID-19 pandemic has the potential to greatly increase the level of anxiety and stress among perinatal women. Pregnant and lactating women are more vulnerable to external stressors such as a major public health crisis and are at higher risk of developing PAD. Prevention, early identification, and treatment of PAD are essential during the pandemic due to the negative effect on both maternal and child outcomes and the significant impact if left unscreened and untreated.

Using technology to increase education about the symptoms and risks associated with PAD may be a viable option for many perinatal women. Increasing screening for PAD in this population is crucial to identify risk factors and symptoms so that early intervention can be initiated. Existing screening tools are self-administered questionnaires that are freely accessible through the Internet or provided as part of routine prenatal care services. For those who live in rural areas and do not have access to the Internet, phone screening can be an equally effective and reliable alternative. Once a screen result is above the cutoff, then providers can initiate individualized treatment options and offer additional resources. Although screening tools are not diagnostic, they can be used to identify those at highest risk for PAD. Further evaluation is needed to arrive at a diagnosis and treatment plan.

Clients should be encouraged to participate in the decision-making process because they are the best advocates for themselves and their families. The ultimate goal is to improve both maternal and child health outcomes by minimizing the development of PAD and alleviating the symptoms by increased screening and education using technology.

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