



Mental Health in Obstetric Patients and Providers During the COVID-19 Pandemic

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Abstract: Psychiatric morbidity is the most common childbirth complication with 1 in 5 women experiencing a perinatal mood or anxiety disorder. The cost of this psychiatric morbidity is pervasive, contributing to devastating maternal health, child developmental, and economic consequences. The coronavirus disease 2019 (COVID-19) pandemic, and associated changes to perinatal experiences, resulted in profound psychological reactions including increased anxiety, depression, stress disorders, and sleep disturbance, further impacting obstetric patients. Providers' mental health has been challenged by moral injury and shared trauma. This article reviews mental health outcomes in regard to the COVID-19 pandemic for obstetric patients and their providers.

Key words: perinatal depression, anxiety, moral injury, shared trauma

Introduction

Maternal psychiatric morbidity is the most common childbirth complication.¹ Approximately 1 in 5 women experience perinatal mood and anxiety disorders (PMADs).^{2,3} These rates are nearly doubled for women of color and those living in poverty.^{4,5} The consequences of PMADs persist past the immediate perinatal period and can include loss of interpersonal and financial resources,⁶ reduced caregiving quality,⁷ compromised infant and child development,^{8,9} and elevated risk for maternal suicide, which accounts for 20% of postpartum deaths.^{10,11} Furthermore, maternal depression during the first postpartum year results in 50% to 80% increased likelihood of facing housing and food insecurity in the future.¹² Beyond maternal and infant consequences, PMADs

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have a lasting impact on communities as a whole; untreated PMADs result in thousands of additional dollars added to health care costs, public sector service costs, and income loss for the affected women and children.¹³ In the United States alone, the total societal cost of untreated PMADs is estimated to be over 14.2 billion dollars during the child's first 5 years of life.¹⁴

The mental health of the obstetric provider is of importance for providers as individuals, as well as with respect to downstream impacts on their patients. While obstetric providers, similar to most medical professionals, are acculturated to an identity oriented to unflappable competence and invincibility, this profile disregards the challenges providers routinely face, particularly in relation to mental health. The weighty responsibility of being an obstetrical provider translates into a large workload, extensive hours, and emotional toll.^{15–17} Beyond the negative consequences for providers themselves, compromised provider mental health has been associated with decreased patient care quality and safety, as well as lower patient satisfaction with overall obstetric care.¹⁸

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus and associated pandemic [coronavirus disease 2019 (COVID-19)] has resulted in mental and physical health upheaval for individuals across the globe.¹⁹ Research indicates that COVID-19 stressors were particularly salient and disruptive for perinatal individuals.¹⁹ Likewise, health care providers faced added mental health challenges in their position as frontline pandemic workers.²⁰ This article reviews the mental health impact of COVID-19 on perinatal patients and their providers, while considering important moderating factors, barriers, and facilitators to accessing mental health care during a world-wide health crisis.

COVID's Impact on Mental Health in the Perinatal Period

Werner et al¹⁹ suggest that perinatal psychiatric morbidity increased during the COVID-19 pandemic due to quarantine restrictions and high rates of unemployment and economic decline, which disproportionately impacted minority and underserved populations. These stressors are exacerbated for the pregnant and postpartum population given the risks for this population of contracting COVID-19. When compared with nonpregnant women, pregnant women who contract COVID-19 are at greater risk of being admitted to the intensive care unit, being put on a ventilator, and death.²¹ Moreover, pregnant women often have concerns about the health of their future infants in the context of contracting COVID-19.²²

DEPRESSION AND ANXIETY

According to King et al,²³ pregnant women during the pandemic had significantly higher levels of prenatal depression compared with women who were pregnant before the pandemic. Fifty-one percent of the pregnant sample studied during the pandemic scored above the cutoff for depression on the Edinburgh Postpartum Depression Scale (EPDS) versus 25% of the prepandemic sample.²³ Vigod et al²⁴ suggest that the impact of the COVID-19 pandemic disproportionately affected parents who had newly delivered given the lack of support from their networks in the context of the government's goal to contain the spread of the virus. In a sample of 1000 postpartum women in Ontario during the first 9 months of the pandemic, clinical visits for PMADs were significantly higher when compared with number of visits prepandemic²⁴; doctor visits for postpartum women increased by 30% during the pandemic when compared with a prepandemic sample.²⁴ Further, despite cultural differences, COVID-19-related stress, having less resilience, and reporting

marital conflict were significantly associated with increased maternal mental health challenges in Italy, China, and The Netherlands.²⁵

In Argentina, a sample of 210 pregnant (n = 105) and nonpregnant (n = 105) women experienced a marked increase in symptoms of anxiety and depression during the first 50 days of lockdown.²⁶ However, pregnant woman compared with nonpregnant women showed a greater increase in these symptoms, with 33% versus 10% respectively reporting moderate to severe depressive symptoms at days 47 to 51 of the lockdown. Pregnant versus nonpregnant women also experienced a less pronounced decline in symptoms, 0.93% in pregnant women versus 2.17% in nonpregnant women, after 150 days of lockdown.²⁶ The study indicates that being pregnant is an additional risk factor for developing depression during a pandemic.²⁶ In Japan, consistent with findings from other countries as indicated, psychological stress was shown to be greater among pregnant and postpartum compared with nonperinatal women based on high scores on the EPDS and the Kessler Psychological Distress Scale (K6).²⁷ Elevated rates of psychological stress were seen among pregnant women who were unable to travel to their hometowns to deliver due to lockdown restrictions and among pregnant women who lived in areas with highest rates of the virus.²⁷

Myers and Emmott²⁸ noted that low levels of social support and social isolation increased a person's risk for postpartum depression (PPD) among the perinatal population in England. They identified 3 main challenges contributing to higher rates of PPD during lockdown: decrease in support from others contributed to feeling overwhelmed by "constant mothering" and managing domestic tasks on their own. In addition, women reported feeling isolated from social supports despite virtual contact, which was deemed an inadequate replacement for face-to-face interaction. Last, women

reported sadness based on an inability to establish "mommy friends" due to the closing of classes for new parents.²⁸

OBJECTIVE ADVERSITY/SUBJECTIVE STRESS

In their work in California, King et al²³ defined "Objective COVID-19 adversity" as the number of current or expected changes in the pregnant women's/partners' employment or finances, along with the number of current changes to the pregnant person's prenatal care. "Subjective COVID-19 stress" included the severity of women's concerns about COVID-19's impact on their social support, medical care, and infant, as well as concerns about themselves or their families contracting the virus. Higher rates of objective adversity were seen in women who were immigrants, those who had a prior history of a mood or anxiety disorder, and those with prenatal complications.²³ Higher levels of subjective stress were seen among pregnant women at elevated risk for contracting COVID-19 based on preexisting medical conditions, women of color, first time pregnant women, women with prior history of a mood or anxiety disorder, and those who resided in areas with low education levels and fewer English speakers. Women with higher levels of both objective adversity and subjective stress had significantly increased rates of prenatal depression overall.²³

FACTORS AFFECTING WOMEN'S MENTAL HEALTH

Overall, research demonstrates that pregnant and postpartum women are uniquely vulnerable to stress and mental health challenges during a global pandemic.^{19,23-28} Given numerous stressors, including the pervasive experience of uncertainty, high rates of contagion, high mortality rate and risks posed to both a woman and her fetus in the event of contracting COVID-19, pregnant women reported higher rates of perceived stress during the pandemic compared with those who were pregnant pre-pandemic.²⁹ Feeling

unprepared for delivery during the pandemic is cited as another factor leading to high stress in pregnant women.²² With hospitals changing their birthing protocols, pregnant women expressed anxiety about potentially not having partners present at the birth and the risk of contracting the virus while hospitalized.¹⁹ Puertas-Gonzalez et al²⁹ suggest that the economic decline due to the COVID-19 pandemic could be a factor in the increase of depressive symptoms for pregnant women, noting that women may have concerns about their quality of life and ability to parent given financial hardship.

Insomnia and general perinatal sleep disturbance has been associated with increased risk for postpartum mood disorders, including depression and anxiety.^{30,31} On a global scale, perinatal sleep disturbance has become ever more prominent during the COVID-19 pandemic. Studies in China, Greece, France, and the United States found a marked increase in insomnia rates comparing prevalence pre-pandemic and throughout the COVID-19 pandemic^{32–35} with increases as high as 26% insomnia prevalence pre-pandemic to 34% post-pandemic.³⁵ Lower tolerance for uncertainty, higher COVID-19-related stress, and loneliness were correlated with greater number of reports of insomnia,³³ which can contribute to risk for PMADs.

Moderating Factors

SOCIAL SUPPORT

There are moderating factors to consider clinically, and when designing interventions aimed at mitigating the impact of PMADs and overall stress on the pregnant person and the future child. Social support is an integral factor relating to perinatal mood disorders^{36–39}; high levels of perceived social support across various points of the perinatal period acts as a buffer against depression.³⁷ Strict lockdowns to prevent further spread of the virus⁴⁰ created widespread, previously

unmatched, depletion of access to social support for perinatal individuals.^{27,28} This circumstance was particularly dire for recently postpartum people given the associated lack of practical support available to these new parents, specifically in Western households²⁸ where it is relatively uncommon to have 3 generations living in the same household.^{25,28} Yet, when a child is born, grandparents are frequently present.²⁸ In the UK specifically, grandparents are commonly used for child care and domestic help postnatally.²⁸ Guo et al²⁵ showed that grandparental support served as a significant factor in decreasing maternal mental health symptoms in Chinese families but its absence played an insignificant role in Italian and Dutch families, likely because of decreased grandparental presence in European homes due to quarantine restrictions. Grandparents in China live in the home 2 and 5 times more frequently than those in Italy and The Netherlands, respectively.²⁵ Amidst the lockdowns, only those families with grandparents living in the home had access to this practical familial support.²⁵

In addition to practical support, depletion of the maternal social network was a significant loss for perinatal individuals in the midst of the COVID-19 pandemic. Antenatal classes, parent-support, and child play groups were either canceled or moved online, limiting the opportunity for new parents to connect and form friendships with one another.²⁸ As one's life and social networks transition radically for first time parents, such groups provide an essential opportunity to adapt and create an expanded social network.⁴¹ Current literature points towards peer support as an effective method for decreasing the risk of PPD and increasing overall maternal mental health.⁴² Mothers' perceptions of whether the difficulties they are encountering are common experiences shared by others influences how they adapt to the stressors,⁴³ making the

formation of a parental support network vital. Parents who reported more loneliness also indicated greater increases in depressive symptoms during the COVID-19 pandemic when compared with pre-COVID-19 and early pregnancy depressive scores.⁴⁴ The connection new mothers form with each and the subsequent communication about the immense challenges of new parenthood, also serves to destigmatize the experience of perinatal depressive symptoms and even moderate their impact.⁴²

SOCIOECONOMIC STATUS (SES)

Low SES, and closely associated factors including marginalized employment status and educational attainment, also put individuals at an increased risk for poor maternal mental health.^{45–48} A reasonable hypothesis is that the exacerbating role of low SES on mental health status would persist during the pandemic. However, studies that focus on the impact of SES at it pertains to perinatal persons during the COVID-19 crisis have found the opposite to be true.^{25,49} In both Italy and China, high educational attainment, often used as a proxy for SES, was significantly correlated with decreased maternal mental health.²⁵ In Chinese families, high income was also significantly correlated with poorer maternal mental health.²⁵ A similar trend was found across the globe in New York City; recently postpartum mothers living in lower SES households reported a significant decrease in depressive symptomatology when compared with postpartum mothers in higher SES households. The low SES sample population who scored ≥ 12 on the EPDS decreased from 8.8% to 6.3% pre-COVID-19 to during COVID-19, while scoring ≥ 12 in the high-income sample increased from 5.1% to 6.6% in this time period.⁴⁹ Post-childbirth, low SES families often struggle to find affordable child care, have limited partner support, and decreased time flexibility⁴⁹;

each of these elements serves as a contributing factor to poor maternal mental health and increased instance of PMADs.^{48,50} The imposed COVID-19 lockdown may have temporarily lightened or eliminated the impact of these issues, reducing traditional low SES maternal stressors. It also is hypothesized that during the lockdown, higher income mothers were unable to rely on support to which they were accustomed, including housekeeping services and private child care.²⁵ Clearly, these counter-intuitive findings highlight health equity issues for a post-COVID world, underscoring the need for health policies addressing maternal work-child-family balance⁴⁹ and thereby supporting the mental health of mothers regardless of SES.

NUMBER OF CHILDREN

The number of children is an impactful factor for perinatal mood disorder risk. A widespread systematic review found that woman who had 3 or more pregnancies were at a 30% increased risk for psychosis.⁵¹ Rates of depressive disorders are also higher in women who have 3 or more children.⁵² The COVID-19 lockdowns created an unprecedented situation for mothers and their children: everyone was home for an extended length of time with no daycare, work, or school to structure the day and through which to distribute child care duties. A Canadian study of 3000 individuals found that parents with children younger than 18 in their home during COVID-19 reported worse mental health than individuals without children in their home during this time period.⁵³ However, the impact of number of children varied by country and by cultural beliefs.²⁵ In China, more children correlated with better maternal mental health, while in Italy and the Netherlands having more children became a risk factor for poor maternal mental health.²⁵ In China, research shows 2-child versus 1-child homes have more stress during typical times,⁵⁴ yet it is posited that

the familial orientation in China indicates that Chinese families with more children receive greater support, which was helpful during the pandemic.²⁵

PSYCHOLOGICAL RESILIENCE

Resilience is broadly defined as having the capacity for the ever-changing psychological progression of adapting, managing, and responding to adversity.⁵⁵ There is ample debate as to the origins of this ability, though genes, rearing environment, and current social-economic contexts play roles. Psychological resilience is associated with decreased PMADs in mothers.^{56,57} Furthermore, resilience buffers the detrimental impact of decreased social support in new mothers.⁵⁷ This trend has held true throughout the COVID-19 pandemic. Psychological resilience was a shared protective factor in mothers across China, Italy, and The Netherlands.²⁵ In each of these countries, less resilience showed a significant association with increased mental health problems.²⁵ Moreover, in the Netherlands psychological resilience buffered the harmful effects of pandemic-related stress on maternal mental health, while in China resilience served as a buffer against the detrimental impact of COVID-related work concerns.²⁵ Such factors that were found to contribute to psychological resilience during the COVID-19 pandemic included having access to the outdoors and the time to practice health behaviors,²² findings that suggest resilience factors can be intentionally pursued as part of mental health intervention and prevention strategies at individual and system levels.

Limitations of Studies

Addressing COVID-19 Impact

Research on perinatal mental health in the time of the COVID-19 pandemic is indisputably an important goal given the

maternal mental and physical health implications, child development, and economic consequences. However, there are several important limitations to research to date, including participant sampling, recruitment methods, and the heavy reliance on technology.

Convenience sampling was used to obtain the research population in a number of the studies reported on above.^{22,25,28} This resulted in study populations largely absent of people of color^{22,23,28} and primarily comprised of higher socioeconomic individuals;^{22,23,25,26,28} these study samples were not demographically representative of each country's true population, particularly when considering those most impacted by the COVID-19 pandemic. Studies were recruited for and conducted using social media and internet-based technology.^{22,23,25,28} This likely led to the exclusion of women living in more rural, lower socioeconomic settings who did not have reliable access to the internet. Moreover, in urban settings where an individual may regularly have access to the internet at public libraries and other such settings, this resource was unavailable during the COVID-19 pandemic, excluding another group of women. As women living in lower SES households typically are at increased risk for perinatal mood disorders,⁴⁵⁻⁴⁸ it is likely that the rates of PMADs reported to date are an underestimate of the true values. Last, it is important to consider the study design of research included in this review. A majority of the studies relied on self-report and utilized a cross-sectional design.^{22,23,25,27-29} This design does not allow for observational assessment or a within-person comparison, prepandemic and postpandemic design, making it difficult to isolate the pandemic's influence and rule out other potential, time-based, factors.

Provider Mental Health

Health care workers are tasked with the heavy responsibility of caring for the lives of others, which often translates to

extensive workloads,^{16,58–62} long hours, and emotional toll.¹⁷ Unsurprisingly, the health care field is marked by elevated levels of burnout, stress, posttraumatic stress syndrome, anxiety, and depression.^{15,63–66} For example, higher rates of burnout, at 49.6% versus 35.7%,⁶⁷ and depression, at 58.0% versus 47.5%,⁶⁷ have been reported among medical students compared with the general population, despite individuals being similar to the general age-matched population before matriculation.^{67,68} The prevalence of mental health conditions in medical providers is exacerbated by the culture created within the health care system; workers are expected to prioritize the needs of others and there is a stigma associated with seeking help.⁶⁸ Poor mental health among health care workers has consequences: it is associated with compromised patient safety, decreased quality of care, lower patient satisfaction, an increased risk of medical errors, and breaches of professionalism.¹⁸ What was a problem during typical, pre-COVID times, became much worse during the pandemic.

Barriers and Facilitators to Provider Mental Health

Stigma continues to be a barrier deterring medical professionals from seeking mental health care treatment despite gains in increased education and resources to address provider mental health needs. Stigma reduces help-seeking behavior for mental health problems among health care professionals due to fear of discrimination; this disinclination to pursue treatment contributes to increased health care costs.⁶⁹ A multi-institutional study that surveyed US medical students reported high levels of stigma associated with mental health care. Students feared discrimination from medical school personnel, peers, and patients. Compared with the

general US population and age-matched individuals, the medical students showed reduced willingness to seek mental health treatment.⁷⁰ However, only a small percentage of respondents attributed their mental health struggles to personal weakness, suggesting that public stigma, such as fear of consequences related to professional reputation and career-path, may play a large role in decreased help-seeking behavior.⁷⁰ In a survey of 1500 physicians, 42.6% reported they had previously experienced a depressive episode; however, a majority of these individuals hesitated to seek help due to fears of letting their colleagues down (73.1%) and confidentiality (53.4%).⁷¹ A qualitative study conducted with general practitioners in the UK corroborated this; common themes elucidated in this study included the demand to attend work, stigma associated with poor mental health, and issues concerning privacy and confidentiality while seeking mental health care.⁷²

Provider Mental Health in the Time of COVID-19

Throughout the COVID-19 pandemic, health care personnel have functioned as frontline workers. Providing medical care on the frontline entailed increased workloads, elevated risk of exposure, uncertainty, fatigue, fear of contracting COVID-19 and spreading it to those around them,⁷³ and scarcity of resources, including deficient information and personal protective equipment. Workers were placed in precarious situations during which they could quickly transition from being the health care provider to an infected patient due to the highly transmissible nature of the COVID-19 virus and the constant exposure associated with being on the frontlines.²⁰ This role reversal is associated with feelings of frustration, helplessness, and tension. This maelstrom of challenging conditions increased providers' vulnerability to mental health symptoms

and disorders including elevated levels of stress, anxiety, and depression.⁷⁴ A study at the Fujian Provincial Hospital in China identified the following factors as contributors to the deteriorating mental health of medical providers: working in isolation wards, concern about infection, shortage of protective equipment, uncertainty about when the pandemic would end, frustration with unsatisfactory results at work, and feelings of loneliness.⁷⁵ These factors contributed to the significantly increased rates of fear, anxiety, and depression of high-risk contact staff compared with that of the nonclinical staff,⁷⁵ for example intensive care unit physicians versus administrative staff. Clinical staff were 1.4 times more likely to feel fear and 2.0 times more likely to suffer from anxiety and depression when compared with nonclinical staff.⁷⁵ Similar results were reported in a cross-sectional study in Wuhan city and additional Chinese provinces. Respondents demonstrated elevated levels of depression, anxiety, insomnia, and distress, with 50.4% of respondents reporting depression, 44.6% reporting anxiety, 34.0% reporting insomnia, and 71.5% reporting general distress.⁷³ Several groups of individuals experienced more severe mental health symptoms; nurses reported higher levels of severe depression than physicians (7.1% vs. 4.9%), women reported higher levels of severe anxiety when compared with men (5.8% vs. 3.4%), and frontline workers reported increased levels of severe insomnia compared with second-line workers (1.7% vs. 0.9%).⁷³ These results corroborate a previous study that reported increased risk of psychological symptoms among health care professionals during the severe acute respiratory syndrome (SARS) outbreak in 2003.⁷⁶

SHARED TRAUMA

As health care providers bear the responsibility of serving their communities in the midst of the pandemic, they must simultaneously process these unprecedented times within their own personal

lives. This subjects them to a “shared traumatic reality,” which is composed of 4 components: (1) a collective trauma between helper and survivor, (2) current day trauma, (3) shared community between the survivor and helper, and (4) “double exposure.” Double exposure refers to the duality a health care worker experiences while providing care to those suffering at the hands of a disaster and at the same time experiencing the disaster firsthand.⁷⁷ This shared traumatic reality: (1) increases the demands placed on health care workers and (2) eliminates protective mechanisms usually in place to delineate victim versus provider, both of which are stress-provoking. Many health care workers have been recruited to medical specialties outside of their expertise and to different cities due to shortage of personnel.⁷⁸ Studies have suggested that being placed in a foreign work setting and tasked with duties outside a provider’s expertise results in significant stress and depression symptoms.⁷⁷ In addition, a tension exists between health care workers’ personal responsibilities to their loved ones and their duty to serve the greater community. Providers are forced to prioritize patients over family, simultaneously placing themselves and their loved ones at risk of contagion. Some have isolated themselves from their families to minimize this risk, leading to loneliness and lack of support, which can precipitate depression.⁷⁹ The exposure to very ill patients also exerts a tremendous toll by serving as a constant reminder of the life-threatening nature of this work.⁷⁷

MORAL INJURY

The overload of COVID-infected patients and the inability of hospitals to meet the associated medical needs forced health care systems to prioritize patients for treatment, such as through the allocation of ventilators.⁷⁸ The responsibility of making these difficult decisions frequently falls to health care providers,

subjecting them to moral injury, a specific form of psychological stress that results from going against what one believes is morally or ethically correct.⁸⁰ Moral injury has been associated with feelings of shame, guilt, and disgust, which can, in turn, increase risk of mental health conditions, such as depression, posttraumatic stress syndrome, and suicidal ideation.⁸¹

The inability to fulfill the obligation to care for each patient to the utmost of one's ability can be morally, mentally, and emotionally injurious.⁷⁷ Patients trust in a provider's oath of nonmaleficence and expect providers to protect them from harm.⁶⁸ With care limitations placed on providers and health care systems during COVID-19, these expectations were not always met. The prioritization of COVID-related treatment lead to delay in non-COVID-19 and nonurgent care, resulting in unintended harm and non-COVID-19 deaths.⁷⁹ The health care system has especially failed to uphold the vow of nonmaleficence among Black, Asian, and Minority Ethnic (BAME) staff and communities, who are disproportionately impacted by COVID-19.⁷⁹ The significant unintended harm and violation of the vow to protect throughout the COVID-19 pandemic has resulted in BAME providers being especially vulnerable to moral injury.

Providers and Mental Health Treatment During COVID-19

Despite experiencing increased mental health concerns, health care workers continued to encounter fear of stigmatization and discrimination that deterred them from seeking professional psychological services and support during the pandemic.²⁰ This stigma was demonstrated in the lack of participation in a support program established in a hospital in China. In China, only 69 of over 8000 health care workers utilized an online mental health assessment that

was the first step in accessing care via a newly established support program.⁸² A systematic review of 59 studies aimed at assessing access to care for COVID-19-related provider mental health issues found that a majority of mental health interventions available to providers focused on individual-level factors and approaches.⁸³ Provider's reluctance to utilize individual intervention approaches highlighted the significant role stigma continues to play in seeking and taking advantage of mental health care.⁸³

Although reluctance among providers to seek help persists, there has been increased recognition of the importance of addressing provider mental health needs. For example, during the COVID-19 outbreak, 2 hospital systems in China offered mental health support to its providers through increased access to online mental health assessments and resources to psychological support.⁸² In addition, with stay-at-home orders, social distancing, and extreme limits on in-person interactions, mental health interventions have taken the forms of web-based video platforms, phone calls, social media, and apps. Another Chinese hospital, the Second Xiangya Hospital, shifted towards telephone and online counseling services to address their providers' needs.⁸⁴ Studies show the potential of apps to serve as an effective outlet for providers to connect with other frontline staff, share their experiences, receive counseling, and participate in online classes promoting mental health, such as yoga and mindfulness.⁸⁵ Combining psychoeducation and prevention initiatives with the maximization of opportunities to reflect on stressful experiences, participate in debriefing sessions, as well as in counseling are essential to the mental health of providers, especially during high-stress times such as the COVID-19 pandemic.¹⁹ Furthermore, it is posited that organizational approaches to improving provider mental health could be seen as less stigmatizing while decreasing the onus placed on providers to initiate care, thus

resulting in more effective care.⁸³ However, to date there is limited evidence on the effectiveness of these mental health and well-being promotion programs.⁸⁶

The Next Steps: Reentrance Anxiety

As communities begin to reemerge after quarantine restrictions and scale back COVID-19 precautionary measures, another aspect of mental health remains to be considered: reentrance anxiety. Pandemic disasters are unique, and as such require specific planning to ensure the behavioral health needs of those most impacted are met when the nations' health emergencies begin to recede.⁸⁷ There is limited research on perinatal mental health as it relates to reentrance into society postpandemic. The COVID-19 pandemic is novel in the gravity of global impact and length of time restrictions persisted. As society returns to prepandemic circumstances it is vital to conduct research on patient and provider mental health as it relates to the transition of returning to routine lives postpandemic.

Conclusions

The COVID-19 pandemic has significantly affected the mental health of perinatal individuals and their providers. For both patients and providers, there are a number of moderating factors to consider with respect to communities and individuals most impacted by the pandemic, factors that are essential to consider when seeing perinatal patients clinically and addressing provider morale and mental health. There has been considerable research on COVID-19 and perinatal mental health, though sampling and other methodological approaches may limit the generalizability of findings. Additional studies are needed on: (1) COVID-19 and perinatal mental health that includes more diverse samples and observational

assessments as well as longitudinal studies (2) how to break down barriers to mental health care for medical providers; and (3) the impact of dwindling COVID-19 precautionary measures, return to work in person, etc. (all together termed "reentrance anxiety").

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References

1. Long MM, Cramer RJ, Jenkins J, et al. A systematic review of interventions for healthcare professionals to improve screening and referral for perinatal mood and anxiety disorders. *Arch Womens Ment Health*. 2019;22:25–36.
2. Gavin NI, Gaynes BN, Lohr KN, et al. Perinatal depression: a systematic review of prevalence and incidence. *Obstet Gynecol*. 2005;106:1071–1083.
3. Dennis CL, Falah-Hassani K, Shiri R. Prevalence of antenatal and postnatal anxiety: systematic review and meta-analysis. *Br J Psychiatry*. 2017;210:315–323.
4. Robinson AM, Benzie KM, Cairns SL, et al. Who is distressed? A comparison of psychosocial stress in pregnancy across seven ethnicities. *BMC Pregnancy Childbirth*. 2016;16:215.
5. Lomonaco-Haycraft KC, Hyer J, Tibbits B, et al. Integrated perinatal mental health care: a national model of perinatal primary care in vulnerable populations. *Prim Health Care Res Dev*. 2018;20:1–8.
6. Dagher RK, McGovern PM, Dowd BE, et al. Postpartum depression and health services expenditures among employed women. *J Occup Environ Med*. 2012;54:210–215.
7. Pearson RM, Melotti R, Heron J, et al. Disruption to the development of maternal responsiveness? The impact of prenatal depression on mother-

- infant interactions. *Infant Behav Dev.* 2012;35: 613–626.
8. Grace SL, Evindar A, Stewart DE. The effect of postpartum depression on child cognitive development and behavior: a review and critical analysis of the literature. *Arch Womens Ment Health.* 2003;6:263–274.
 9. Kingston D, Tough S, Whitfield H. Prenatal and postpartum maternal psychological distress and infant development: a systematic review. *Child Psychiatry Hum Dev.* 2012;43:683–714.
 10. Lindahl V, Pearson JL, Colpe L. Prevalence of suicidality during pregnancy and the postpartum. *Arch Womens Ment Health.* 2005;8: 77–87.
 11. Mangla K, Hoffman MC, Trumppf C, et al. Maternal self-harm deaths: an unrecognized and preventable outcome. *Am J Obstet Gynecol.* 2019;221: 295–303.
 12. Curtis MA, Corman H, Noonan K, et al. Maternal depression as a risk factor for family homelessness. *Am J Public Health.* 2014;104:1664–1670.
 13. Bauer MS, Damschroder L, Hagedorn H, et al. An introduction to implementation science for the non-specialist. *BMC Psychol.* 2015;3:32.
 14. Luca DL, Margiotta C, Staatz C, et al. Financial toll of untreated perinatal mood and anxiety disorders among 2017 births in the United States. *Am J Public Health.* 2020;110:888–896.
 15. Shanafelt TD, Boone S, Tan L, et al. Burnout and satisfaction with work-life balance among US physicians relative to the general US population. *Arch Intern Med.* 2012;172:1377–1385.
 16. Shanafelt TD, West CP, Sloan JA, et al. Career fit and burnout among academic faculty. *Arch Intern Med.* 2009;169:990–995.
 17. Adriaenssens J, De Gucht V, Maes S. Causes and consequences of occupational stress in emergency nurses, a longitudinal study. *J Nurs Manag.* 2015;23: 346–358.
 18. Panagioti M, Geraghty K, Johnson J, et al. Association between physician burnout and patient safety, professionalism, and patient satisfaction: a systematic review and meta-analysis. *JAMA Intern Med.* 2018;178:1317–1331.
 19. Werner EA, Aloisio CE, Butler AD, et al. Addressing mental health in patients and providers during the COVID-19 pandemic. *Semin Perinatol.* 2020;44: 151279.
 20. Zheng W. Mental health and a novel coronavirus (2019-nCoV) in China. *J Affect Disord.* 2020;269: 201–202.
 21. Zambrano LD, Ellington S, Strid P, et al. Update: characteristics of symptomatic women of reproductive age with laboratory-confirmed SARS-CoV-2 infection by pregnancy status—United States, January 22–October 3, 2020. *MMWR Morb Mortal Wkly Rep.* 2020;69:1641–1647.
 22. Preis H, Mahaffey B, Heiselman C, et al. Vulnerability and resilience to pandemic-related stress among US women pregnant at the start of the COVID-19 pandemic. *Soc Sci Med.* 2020;266: 113348.
 23. King LS, Feddoes DE, Kirshenbaum JS, et al. Pregnancy during the pandemic: the impact of COVID-19-related stress on risk for prenatal depression. *Psychol Med.* 2021;1–11. doi: 10.1017/S003329172100132X.
 24. Vigod SN, Brown HK, Huang A, et al. Postpartum mental illness during the COVID-19 pandemic: a population-based, repeated cross-sectional study. *CMAJ.* 2021;193:E835–E843.
 25. Guo J, De Carli P, Lodder P, et al. Maternal mental health during the COVID-19 lockdown in China, Italy, and the Netherlands: a cross-validation study. *Psychol Med.* 2021;1–11. doi: 10.1017/S00332917210005504.
 26. López-Morales H, Del-Valle MV, Andrés ML, et al. Longitudinal study on prenatal depression and anxiety during the COVID-19 pandemic. *Arch Womens Ment Health.* 2021;1–10. doi: 10.1007/s00737-021-01152-1.
 27. Obata S, Miyagi E, Haruyama Y, et al. Psychological stress among pregnant and puerperal women in Japan during the coronavirus disease 2019 pandemic. *J Obstetr Gynaecol Res.* 2021;47: 2990–3000.
 28. Myers S, Emmott EH. Communication across maternal social networks during England’s first national lockdown and its association with postnatal depressive symptoms. *Front Psychol.* 2021;12:648002.
 29. Puertas-Gonzalez JA, Mariño-Narvaez C, Peralta-Ramirez MI, et al. The psychological impact of the COVID-19 pandemic on pregnant women. *Psychiatry Res.* 2021;301:113978.
 30. Osnes RS, Roaldset JO, Follestad T, et al. Insomnia late in pregnancy is associated with perinatal anxiety: a longitudinal cohort study. *J Affect Disord.* 2019;248:155–165.
 31. Okun ML. Disturbed sleep and postpartum depression. *Curr Psychiatry Rep.* 2016;18:66.
 32. Kokou-Kpolou CK, Megalakaki O, Laimou D, et al. Insomnia during COVID-19 pandemic and lockdown: prevalence, severity, and associated risk factors in French population. *Psychiatry Res.* 2020;290:113128.
 33. Voitsidis P, Gliatas I, Bairachtari V, et al. Insomnia during the COVID-19 pandemic in a Greek population. *Psychiatry Res.* 2020;289:113076.
 34. Dzierzewski JM, Dautovich ND, Ravvys SG, et al. Insomnia symptoms during the COVID-19 pandemic: an examination of biopsychosocial moderators. *Sleep Med.* 2021. [Epub ahead of print].
 35. Li Y, Qin Q, Sun Q, et al. Insomnia and psychological reactions during the COVID-19 outbreak in China. *J Clin Sleep Med.* 2020;16:1417–1418.

36. Pao C, Guintivano J, Santos H, et al. Postpartum depression and social support in a racially and ethnically diverse population of women. *Arch Womens Ment Health*. 2019;22:105–114.
37. Li Y, Long Z, Cao D, et al. Social support and depression across the perinatal period: a longitudinal study. *J Clin Nurs*. 2017;26:2776–2783.
38. Milgrom J, Hirshler Y, Reece J, et al. Social support—a protective factor for depressed perinatal women? *Int J Environ Res Public Health*. 2019;16:8.
39. Barkin JL, Beals L, Bridges CC, et al. Maternal functioning and depression scores improve significantly with participation in visiting Moms® Program. *J Am Psychiatr Nurses Assoc*. 2021;27:54–63.
40. Amer F, Hammoud S, Farran B, et al. Assessment of countries' preparedness and lockdown effectiveness in fighting COVID-19. *Disaster Med Public Health Prep*. 2020;15:e15–e22.
41. Strange C, Fisher C, Howat P, et al. Fostering supportive community connections through mothers' groups and playgroups. *J Adv Nurs*. 2014;70:2835–2846.
42. Prevatt BS, Lowder EM, Desmarais SL. Peer-support intervention for postpartum depression: participant satisfaction and program effectiveness. *Midwifery*. 2018;64:38–47.
43. Law KH, Jackson B, Guelfi K, et al. Understanding and alleviating maternal postpartum distress: perspectives from first-time mothers in Australia. *Soc Sci Med*. 2018;204:59–66.
44. Perzow SED, Hennessey EP, Hoffman MC, et al. Mental health of pregnant and postpartum women in response to the COVID-19 pandemic. *J Affect Disord Rep*. 2021;4:100123.
45. Lancaster CA, Gold KJ, Flynn HA, et al. Risk factors for depressive symptoms during pregnancy: a systematic review. *Am J Obstet Gynecol*. 2010;202:5–14.
46. Pooler J, Perry DF, Ghandour RM. Prevalence and risk factors for postpartum depressive symptoms among women enrolled in WIC. *Matern Child Health J*. 2013;17:1969–1980.
47. Tabet M, Flick LH, Cook CA, et al. Age at first birth and psychiatric disorders in low-income pregnant women. *J Womens Health (Larchmt)*. 2016;25:810–817.
48. Goyal D, Gay C, Lee KA. How much does low socioeconomic status increase the risk of prenatal and postpartum depressive symptoms in first-time mothers? *Womens Health Issues*. 2010;20:96–104.
49. Silverman ME, Burgos L, Rodriguez ZI, et al. Postpartum mood among universally screened high and low socioeconomic status patients during COVID-19 social restrictions in New York City. *Sci Rep*. 2020;10:22380.
50. Beeber LS, Perreira KM, Schwartz T. Supporting the mental health of mothers raising children in poverty: how do we target them for intervention studies? *Ann N Y Acad Sci*. 2008;1136:86–100.
51. Davies C, Segre G, Estradé A, et al. Prenatal and perinatal risk and protective factors for psychosis: a systematic review and meta-analysis. *Lancet Psychiatry*. 2020;7:399–410.
52. Aras N, Oral E, Aydin N, et al. Maternal age and number of children are risk factors for depressive disorders in non-perinatal women of reproductive age. *Int J Psychiatry Clin Pract*. 2013;17:298–306.
53. Gadermann AC, Thomson KC, Richardson CG, et al. Examining the impacts of the COVID-19 pandemic on family mental health in Canada: findings from a national cross-sectional study. *BMJ Open*. 2021;11:e042871.
54. Wu Z, Penning MJ. Children and the mental health of older adults in China: what matters? *Popul Res Policy Rev*. 2019;38:27–52.
55. Goodman DJ, Saunders EC, Wolff KB. In their own words: a qualitative study of factors promoting resilience and recovery among postpartum women with opioid use disorders. *BMC Pregnancy Childbirth*. 2020;20:178.
56. Sexton MB, Hamilton L, McGinnis EW, et al. The roles of resilience and childhood trauma history: main and moderating effects on postpartum maternal mental health and functioning. *J Affect Disord*. 2015;174:562–568.
57. Hain S, Oddo-Sommerfeld S, Bahlmann F, et al. Risk and protective factors for antepartum and postpartum depression: a prospective study. *J Psychosom Obstet Gynaecol*. 2016;37:119–129.
58. Shanafelt TD, Mungo M, Schmitgen J, et al. Longitudinal study evaluating the association between physician burnout and changes in professional work effort. *Mayo Clin Proc*. 2016;91:422–431.
59. Anderson JC, Pfeil S, Surawicz C. Strategies to combat physician burnout in gastroenterology. *Am J Gastroenterol*. 2017;112:1356–1359.
60. Van Ham I, Verhoeven AA, Groenier KH, et al. Job satisfaction among general practitioners: a systematic literature review. *Eur J Gen Pract*. 2006;12:174–180.
61. Groenewegen PP, Hutten JB. Workload and job satisfaction among general practitioners: a review of the literature. *Soc Sci Med*. 1991;32:1111–1119.
62. Laubach W, Fischbeck S. Job satisfaction and the work situation of physicians: a survey at a German University Hospital. *Int J Public Health*. 2007;52:54–59.
63. Hannan E, Breslin N, Doherty E, et al. Burnout and stress amongst interns in Irish hospitals: contributing factors and potential solutions. *Ir J Med Sci*. 2018;187:301–307.

64. Qiao Z, Chen L, Chen M, et al. Prevalence and factors associated with occupational burnout among HIV/AIDS healthcare workers in China: a cross-sectional study. *BMC Public Health*. 2016; 16:335.
65. Shanafelt TD, Hasan O, Dyrbye LN, et al. Changes in burnout and satisfaction with work-life balance in physicians and the general US working population between 2011 and 2014. *Mayo Clin Proc*. 2015;90:1600–1613.
66. Zhou C, Shi L, Gao L, et al. Determinate factors of mental health status in Chinese medical staff: a cross-sectional study. *Medicine (Baltimore)*. 2018; 97:e0113.
67. Dyrbye LN, West CP, Satele D, et al. Burnout among US medical students, residents, and early career physicians relative to the general US population. *Acad Med*. 2014;89:443–451.
68. Dyrbye LN, Thomas MR, Shanafelt TD. Systematic review of depression, anxiety, and other indicators of psychological distress among US and Canadian medical students. *Acad Med*. 2006;81:354–373.
69. Evans-Lacko S, Clement S, Corker E, et al. How much does mental health discrimination cost: valuing experienced discrimination in relation to healthcare care costs and community participation. *Epidemiol Psychiatr Sci*. 2015;24:423–434.
70. Dyrbye LN, Eacker A, Durning SJ, et al. the impact of stigma and personal experiences on the help-seeking behaviors of medical students with burnout. *Acad Med*. 2015;90:961–969.
71. Adams EF, Lee AJ, Pritchard CW, et al. What stops us from healing the healers: a survey of help-seeking behaviour, stigmatisation and depression within the medical profession. *Int J Soc Psychiatry*. 2010;56:359–370.
72. Spiers J, Buszewicz M, Chew-Graham CA, et al. Barriers, facilitators, and survival strategies for GPs seeking treatment for distress: a qualitative study. *Br J Gen Pract*. 2017;67:e700–e708.
73. Lai J, Ma S, Wang Y, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open*. 2020;3:e203976.
74. Lee AM, Wong JG, McAlonan GM, et al. Stress and psychological distress among SARS survivors 1 year after the outbreak. *Can J Psychiatry*. 2007;52:233–240.
75. Lu W, Wang H, Lin Y, et al. Psychological status of medical workforce during the COVID-19 pandemic: a cross-sectional study. *Psychiatry Res*. 2020;288:112936.
76. Verma S, Mythily S, Chan YH, et al. Post-SARS psychological morbidity and stigma among general practitioners and traditional Chinese medicine practitioners in Singapore. *Ann Acad Med Singap*. 2004;33:743–748.
77. Baum N. Shared traumatic reality in communal disasters: toward a conceptualization. *Psychotherapy (Chic)*. 2010;47:249–259.
78. Johnson SB, Butcher F. Doctors during the COVID-19 pandemic: what are their duties and what is owed to them? *J Med Ethics*. 2021;47:12.
79. Shale S. Moral injury and the COVID-19 pandemic: reframing what it is, who it affects and how care leaders can manage it. *BMJ Leader*. 2020;4:224–227.
80. Litz BT, Stein N, Delaney E, et al. Moral injury and moral repair in war veterans: a preliminary model and intervention strategy. *Clin Psychol Rev*. 2009;29:695–706.
81. Williamson V, Stevelink SAM, Greenberg N. Occupational moral injury and mental health: systematic review and meta-analysis. *Br J Psychiatry*. 2018;212:339–346.
82. Chung JPY, Yeung WS. Staff mental health self-assessment during the COVID-19 outbreak. *East Asian Arch Psychiatry*. 2020;30:34.
83. Muller AE, Hafstad EV, Himmels JPW, et al. The mental health impact of the covid-19 pandemic on healthcare workers, and interventions to help them: a rapid systematic review. *Psychiatry Res*. 2020;293:113441.
84. Huang J, Liu F, Teng Z, et al. Care for the psychological status of frontline medical staff fighting against coronavirus disease 2019 (COVID-19). *Clin Infect Dis*. 2020;71:3268–3269.
85. Ripp J, Peccoralo L, Charney D. Attending to the emotional well-being of the health care workforce in a New York City Health System during the COVID-19 pandemic. *Acad Med*. 2020;95: 1136–1139.
86. Gray P, Senabe S, Naicker N, et al. Workplace-based organizational interventions promoting mental health and happiness among healthcare workers: a realist review. *Int J Environ Res Public Health*. 2019;16:4396.
87. Sprang G, Silman M. Posttraumatic stress disorder in parents and youth after health-related disasters. *Disaster Med Public Health Prep*. 2013; 7:105–110.