Can a Mother’s Mental Health Impact a Baby in the Womb?

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SCIENCE

Growing research indicates a pregnant woman’s stress level and overall mental well-being can affect fetal and child development, yet access to prenatal mental health care remains inadequate

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A pregnant mother’s mental wellness can impact her child’s future physical, mental and behavioral health Emily Lankiewicz / Oscar Wong via Getty Images

Lying on the hospital bed with two elastic belts wrapped around my pregnant belly, I was doing my best to focus on the intake nurse's questions: *Have you had any recent thoughts of harming yourself? Are you sleeping? Do you feel safe at home with your partner?*

About 24 hours had passed since I'd last felt any nudges or kicks in my 28-week pregnant stomach, and I was panicked. My husband and I went to the hospital, where I was set up for a nonstress test to monitor our baby's heart rate and movement. I was so focused on my baby that I hadn't anticipated a line of questioning about *my* current emotional state.

Mental health was not a regular, or expected, part of prenatal care until recently. Pregnancy once was believed to protect women from depression and other mental illnesses. As recently as 2010, a committee reviewing revisions to the *Diagnostic and Statistical Manual of Mental Disorders*, psychiatry's Bible, regarding postpartum depression found, as observers noted, a lack of "persuasive evidence to indicate that postpartum depression is distinct from other existing depressive disorders." Today, health professionals understand that the hormonal, emotional, financial and social changes associated with pregnancy and birth carry their own unique risks and treatment needs; the term "perinatal depression," referring to a period that encompasses both pregnancy and the weeks and months following birth, is becoming more common as a way to acknowledge that these symptoms can also arise prenatally, not just postpartum.

What researchers are discovering is that mental health concerns like stress, anxiety and depression are, as one 2024 review paper noted, "the most common complications of pregnancy." Around one in five women experience perinatal depression globally. Among a study of 11 wealthy nations, the United States has the highest maternal mortality rate. Nearly one-quarter of pregnancy-related deaths are caused by mental health conditions, even though 80 percent of these losses are preventable, according to the Policy Center for Maternal Mental Health.

The pregnant individual isn't the only person who's impacted, though: Doctors have long known that a mother's well-being is strongly correlated to her baby's. That's why physicians recommend prenatal vitamins, regular exercise and the avoidance of certain foods to pregnant individuals, for example. But recent studies demonstrate that a mother's mental wellness is also a meaningful harbinger of her children's future physical, mental and behavioral health. Serious delivery issues such as preeclampsia, preterm birth and small birth size are all more likely to occur in women with mental illness. Significant maternal stress —whether it rises to the level of a diagnosable illness or not—impairs fetal brain development and can lead to long-term cognitive, behavioral and learning problems in offspring.

"Depression or stress or anxiety, this unpleasant, negative state in pregnancy, whatever we choose to call it, has negative effects on the fetus and on the brain and perhaps on the whole epigenetic milieu of the fetus," says Katherine Wisner, associate chief of perinatal mental

health at the Developing Brain Institute, a research facility connected to Children's National Hospital in Washington, D.C. that's focused on brain development in utero and in newborns.

Researchers are only beginning to understand how these conditions are passed on to the next generation.

The stress test

Something odd was emerging in the numbers Robert Freedman's team was evaluating in 2016: The pregnant Black women in their study had significantly lower levels of choline in their systems during the second trimester than their white counterparts, even when adjusted for genetics and ZIP codes.

Choline is a naturally occurring nutrient found in foods such as eggs, meat, certain beans and nuts. It stabilizes our genomes, contributes to brain and nervous system functions, and plays a key role in fetal brain development.

Freedman, a psychiatrist at the University of Colorado Anschutz Medical Campus, traveled to Uganda to determine if women living in tribal regions with fairly limited diets also had low choline. They didn't. And they were delivering their babies on time, whereas Black women were known to experience the highest rate of preterm births in the U.S. What was going on?

The answer: high stress. Freedman discovered that the American women had higher levels of cortisol—the stress hormone—in their hair. "The stress level causes the mother to hold the choline within her own body, so it's not available to help the baby and the placenta," Freedman says. That can result in preterm birth and an increased likelihood of the baby having issues with attention and behavior, in part because the lack of choline impairs hippocampal brain growth.

Treatment, Freedman found, was straightforward. In a subsequent double-blind study, one group of pregnant women were given choline supplements and the other placebos. The women in the former group delivered on time and, three-and-a-half years later, their children displayed fewer behavioral concerns. (Postpartum, babies access choline through breast milk or formula, which is required to include the nutrient per Food and Drug Administration guidelines.)

Thus far, Freedman's team has studied about 800 women across five clinical trials. The results tell a "consistent story," he says: "Prenatal choline and phosphatidylcholine are very effective in giving us babies that are less likely to have problems in attention and less likely to have problems in socializing with other people. Those put babies on a good track for development and protect them from mental illness as they grow older."

Choline has not yet seen widespread uptake by physicians, Freedman says, though it is readily available over the counter, including in many prenatal vitamins. However, the contained amounts are generally much lower than the 550 milligrams per day recommended by the FDA or the 450 milligrams the American Medical Association advocated for back in 2017. The preventative step did recently receive one major boost: In June, Colorado's governor signed first-of-its-kind legislation to cover choline supplements for all pregnant women on Medicaid; the practice went into effect on October 1. The step is a significant one, as approximately 40 percent of all births in the U.S. are covered by Medicaid, according to the Centers for Disease Control and Prevention.

A single nutrient is not the answer to a population-wide concern, however. Researchers are currently working to understand the complex and varied mechanics behind precisely *how* maternal stress influences fetuses in order to more effectively—and proactively—treat mothers and their offspring.

If experienced chronically or at elevated levels, stress has been shown to impair placenta function, decreasing the oxygen and nutrients being delivered to the baby, and cause inflammation in the mom's body that alters newborn brain structure—and continues to do so in early and young childhood—in ways that can eventually lead to a diagnosis of autism or other mental health conditions. In short, Wisner explains, "Kids with highly stressed parents are at greater risk to develop these sorts of early signs that they may have difficulty with developmental disorders later."

These negative cognitive outcomes become visible as early as 18 months of age, adds Yao Wu, a fetal and neonatal brain image specialist at Children's National Hospital. "Elevated maternal psychological distress during pregnancy has been associated with impaired social, emotional, behavioral outcomes and some cognitive language delays and learning memory problems," she explains. "[They also might experience] some neuropsychiatric problems, such as increased risk for anxiety and depression."

And babies, once exposed to these elevated stress levels, may then anticipate a stressful post-birth environment. For example, the ability to suppress or filter out stimuli—a function that individuals with schizophrenia, bipolar disorder or attention deficit disorder struggle with—develops in the brain as early as 16 weeks of gestation, per Wisner.

Though this line of study is still in its infancy, researchers say mothers and their physicians can implement preventative steps now to reduce stress, including therapy, medication and universal mental health screenings. That is, if women can access them.

Finding adequate care

Nancy Byatt, a perinatal psychiatrist, has committed her career to increasing access to maternal mental health services and improving outcomes for parents and children. So she wasn't surprised to discover that less than 25 percent of the pregnant women who screen positive for depression received an initial mental health appointment. Connecting with mental health care has been a chronic concern across the U.S.: Approximately 70 percent of U.S. counties currently lack access to adequate maternal mental health services, so even people who want and seek out help struggle to receive it.

"In my opinion, we've been in a mental health crisis for a long time, and now we're an emergency. And those gaps in care often are bigger for pregnant and postpartum individuals," says Byatt, who is now the executive director of the Lifeline for Families center and Lifeline for Moms program in Massachusetts. "We can't save people's lives if they're not getting the treatment that they need."

That's one of the reasons why she helped develop and served as the founding medical director for the Massachusetts Child Psychiatry Access Program (MCPAP) for Moms, which provides training and resources for perinatal and obstetrics professionals, and consultations and referrals for patients statewide. The program is insurance-blind, so even mothers who aren't covered can receive assistance. Randomized clinical trials found that patients served by programs enrolled with MCPAP saw an improvement in their depressive symptoms over time, and treatment rates also increased.

Lifeline for Moms is an extension of that work. The program's focus is expanding MCPAP's innovative model of care across the country—and even globally—by researching its efficacy, making improvements, and helping other states and countries build the capacity to implement similar offerings.

Since MCPAP launched in 2014, perinatal psychiatry access programs have started up in 30 states, from South Carolina to Washington, with most coming online over the past couple of years. "All of these programs together have the potential to cover almost 70 percent of the births across the country," Byatt says.

Most women won't know if they interact with a program like MCPAP unless their physicians directly connect them for a consultation. Much of the work happens behind the scenes. The questioning I received at the hospital, for example, could have stemmed from Lifeline training.

Learning more about how consequential my own stress can be for my baby initially left me even more unnerved—an unfortunate paradox. But worry is part of parenthood (or so I've been told). I've leaned into remedies that are proven to reduce stress: meeting regularly with my therapist, taking deep breaths, going for morning walks, getting prenatal massages. But only so much is within our control as parents or soon-to-be parents. Depending on your circumstances, chronic stress may not be something you can get a handle on, especially

while dealing with everything else that comes along with pregnancy. But a lot more help is available today than ever before, meaning more moms can receive the assistance they need and set their children up for healthier futures, leaving one less worry on the list.

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