

News and Perspectives

Catching the “Pink Flags”: Using Smart Devices to Spot Early Signs of Postpartum Psychosis

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Abstract

Postpartum psychosis is an underrecognized condition that can have tragic consequences without intervention. In this *News and Perspectives* article, JMIR Correspondent Benedette Cuffari reports on how technology could support earlier identification and treatment.

Key Takeaways:

- Standard screening methods often miss subtle, early “pink flags” of postpartum psychosis, a treatable yet dangerous psychiatric emergency.
- Emerging smart wearables and AI have the potential to spot individual changes in sleep and physical activity to prompt early action, though research is still needed before real-world adoption.

Few medical emergencies are as misunderstood as postpartum psychosis (PPP), a rare but serious psychiatric condition that can have devastating effects on the health and life of the mother, baby, and family. The tragedy of PPP is not that it can't be treated—if caught early, PPP is [treatable and reversible](#), with a generally positive prognosis. Rather, the problem lies with the limitations of current screening methods that may fail to capture the complexities of the condition, making it hard to identify a mother in crisis before it's too late.

What We Know—And Don't Know—About PPP

Hormonal changes, particularly when accompanied by severe sleep deprivation during the newborn period, may cause up to 85% of new mothers to experience postpartum mood disorders ranging from mild “baby blues” to clinical postpartum depression or anxiety. At the most severe end of this spectrum is PPP, which affects about [0.1%-0.2% of women after childbirth](#) and is considered a [preventable psychiatric emergency](#).

PPP remains poorly understood. While [experts are advocating for one](#), it currently lacks an official, stand-alone diagnosis in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR)*, the standard reference manual used by clinicians to classify mental health conditions. Although bipolar disorder, previous PPP, and family history are established risk factors, [PPP can arise without a prior psychiatric history](#), complicating efforts to identify mothers at risk. Compounding this challenge is the unpredictable nature of PPP itself.

“Presentation varies from person to person,” explains Arianna Di Florio, MD, PhD, an expert in reproductive mental health

at Cardiff University. “Postpartum episodes may look very different from episodes outside the postpartum period, so for many women, there are no early signs, even if there is a history of bipolar disorder.”

The Challenge of Early Detection

PPP onset varies; although most cases occur within the first 2 weeks after delivery, women at higher risk can develop symptoms several months after giving birth. Mania, depression, brain fog, and symptoms like paranoia, delusions, and hallucinations are characteristic of PPP.

In the United States, [routine postpartum care typically involves a single, comprehensive visit no later than 12 weeks after delivery](#). During this visit, a new mom's mental health is evaluated using [standard questionnaires](#), most of which have been developed to assess depression and, as a result, often fail to efficiently screen for symptoms of mania or psychosis.

Moreover, the earliest signs—arguably the most important to identify to prevent what can be a catastrophic outcome—are less obvious and often overlooked.

Subtle shifts in mood and behavior, such as irritability, insomnia, and racing thoughts, are considered early warning signs of PPP. These features likely sound familiar to any new mother adjusting to newborn life, which may explain why these “[pink flags](#)”—quieter warning signs that appear before more obvious psychosis—are often normalized until a crisis occurs. In addition to irritability, pink flags can include [mood changes](#), disorientation, and disorganized thinking and mood, which can progress to “red flags” or full-blown psychosis.

This raises an important question: if early signs of PPP can be difficult to recognize during a brief clinical visit, how can we spot them sooner?

Could Technology Detect These Changes Earlier?

There is growing recognition of a relationship between sleep issues and PPP. However, it can be challenging to accurately quantify the risk associated with severe sleep loss—which can vary depending on [prior history with sleep](#). Almost all new parents experience changes in their sleep quality and duration, making it important to distinguish between routine disruptions and more concerning changes in sleep. Mothers at higher risk for PPP may be [unable or unwilling to sleep](#) or even feel a surge of energy despite days of minimal sleep.

“Monitoring sleep, or ensuring that a sufficient sleep quality is achieved, could be helpful,” states Paola Dazzan, PhD, a specialist in the neurobiology of psychosis at King’s College London. Wearable devices like smartwatches can passively collect information on PPP-relevant [sleep traits](#), rest-activity cycles, and nighttime awakenings. Using this data, clinicians could, theoretically, distinguish expected newborn disruptions from states that could precede PPP.

The added potential value of these devices is that they can assess how a mother’s sleep and activity patterns change relative to her own baseline. For example, a smartwatch could detect when a mother who usually sleeps 5-6 hours/night is suddenly sleeping only 2-3 hours and showing unusually high activity levels at night. If a wearable sensor detects this pattern, it could alert clinicians to intervene before symptoms worsen.

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*The best signals are
unique to each person.*

John Torous, MD, MBI

“The best signals are unique to each person,” explains John Torous, MD, MBI, a Harvard Medical School psychiatrist and director of digital psychiatry at Beth Israel Deaconess Medical Center. “So for one mother, it may be a change in sleep compared to baseline, and for another, it may be a change in heart rate variability.”

Beyond sleep duration alone, smartwatches and other wearable sensors can capture early and nonspecific changes in an individual’s heart rate or behavior that might otherwise go

unnoticed. In one [study](#) monitoring nonpregnant people with bipolar disorder over several weeks, more frequent changes in heart rate were associated with manic states, as compared to depressive or stable moods. These fluctuations can occur when a person is active or lying still, suggesting that heart rate patterns may provide additional clues about an individual’s mental state.

Wearable sensor data could become even more informative when combined with self-reported information on how the mother is feeling in real time and may even offer additional avenues for intervention. Emerging work in AI, including predictive models and chatbot-based support, suggests a unique opportunity for mothers to experience immediate companionship during periods of emotional distress, particularly when these moments occur outside of clinical hours.

In one [study](#), postpartum women formed a therapeutic bond with an AI-powered chatbot within 3-5 days of use and showed improvement in depression scores at 6 weeks postpartum, with 91% of users reporting that they were satisfied or highly satisfied with the chatbot. Similar trends have been observed in large-scale mobile health initiatives like the [Mom2B](#) project and [Postpartum Mothers Mobile study \(PMMS\)](#). While primarily focused on depressive symptoms, these studies demonstrate that new mothers were willing to share sensitive and personal data through—and got some benefit from—digital platforms, supporting the potential utility of future research aimed at expanding and improving their accuracy and clinical utility for conditions like PPP.

Technology as an Ally, Not a Replacement

Before any of these technologies can be integrated into routine postpartum care, deeper research into the biological, psychological, and social factors impacting the perinatal period is urgently needed.

Data must be collected and validated across diverse cohorts to verify that these tools are accurate and generalizable. Equally important will be ensuring that mothers understand what data are being collected, who can access it, and how it will be used.

Regardless of future progress in sensors, prediction models, and AI, many clinicians like Di Florio remain cautious. “If we think we can reduce the human experience to a tech device—which we can’t—that is a world I don’t want to live in.” The goal, then, is not to replace human interaction with technology, but rather to use it to strengthen the care surrounding a mother and her baby.

Keywords: postpartum period; postpartum psychosis; artificial intelligence; wearable electronic devices; early diagnosis; mental health; risk assessment; psychotic disorders

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