

A model to enable efficient, accurate diagnosis of postpartum depression and find appropriate treatment

July 5 2023



Credit: Unsplash/CC0 Public Domain

In a new study, Prof. Tsachi Ein-Dor of the Baruch Ivcher School of Psychology at Reichman University, together with Ph.D. student Gal

Levin, developed a theory that unifies, for the first time, all the processes impacting the likelihood of developing postpartum depression (PPD), as well as the severity of its symptoms. In the study, the researchers also demonstrated that new pharmacological and psychotherapeutic strategies may help in dealing with PPD.

They developed a comprehensive biological model which explains the different ways in which depression develops around and after birth. According to the model, there are four main factors that may lead to the appearance of the symptoms we know as postpartum depression: immune system activity, continuous stress, hormonal imbalance, and a reduction in activities that involve closeness (such as breastfeeding and skin-to-skin contact).

Today, two women experiencing different symptoms out of the nine included in the definition of PPD receive the same diagnosis. The new model allows not only for a more efficient diagnosis, but also for the adaptation of unique treatment for each patient, according to her specific symptoms of depression.

Moreover, through a preliminary test taken at the beginning of pregnancy, the model is also able to predict the onset of the disorder even before the first symptom appears. Finally, the model outlines new goals for highly targeted drugs that can improve patients' quality of life with significantly reduced side effects.

Prof. Tsachi Ein-Dor says, "Each year, about 174 million women around the world are expected to suffer from [postpartum depression](#). Although the discourse on the treatment of the disorder began in ancient Babylon, to this day there is no effective psychological or medicinal treatment that works for all women."

"The main obstacle to finding such a treatment lies in the multitude of

reasons for the development of depression, which are seemingly unrelated to one another. Furthermore, women are twice as likely than men to be affected by the disorder due to the activity of the female sex hormone, estrogen, which can have toxic effects. Activities such as breastfeeding, rooming-in, skin-to-[skin contact](#), and [social support](#) are very important, as they may lead to a reduction in depressive symptoms."

The four factors mentioned above lead to increased production of toxic substances and a reduction in the production of substances necessary for normal mood and activity. Each factor alone may lead to the onset of depression, but the mutual interaction between them makes them more potent, and is what makes [depression](#) so common.

Specifically, these factors affect how the body and brain use the amino acid tryptophan. This amino acid goes undergoes different metabolic processes, in two main paths—one enables the production of serotonin and melatonin, and the other results in the production of various substances used, among other things, to increase brain activity and produce energy (NAD⁺ and quinolinic acid).

When the system is in balance, there is enough serotonin and melatonin, which are necessary for normal cognitive activity and for regulating sleep and appetite, and the amount of energy-producing substances is balanced.

According to the model, extreme changes in the four factors may disrupt the balance and bring about a change in the equilibrium between the two paths. As a result, the amount of serotonin and melatonin becomes insufficient, and the amount of energy-producing substances becomes high to the point of toxicity, which leads to the death of cells and other destructive processes in the brain.

The model explains that ongoing stress will tilt the scales towards the

energy-producing substances, at the expense of the production of serotonin and melatonin. It can also lead to [chronic illness](#) that may bring about long-term inflammation, a lack of social support and closeness, or an imbalance in estrogen and progesterone.

A decrease in melatonin leads to sleep problems, lack of serotonin leads to cognitive difficulties, and the toxicity resulting from the excess of energy-producing substances leads to the death of cells and the loss of pleasure from activities that were enjoyable in the past.

The work is published in the journal *Translational Psychiatry*.

More information: Gal Levin et al, A unified model of the biology of peripartum depression, *Translational Psychiatry* (2023). [DOI: 10.1038/s41398-023-02439-w](#)

Provided by Reichman University

Citation: A model to enable efficient, accurate diagnosis of postpartum depression and find appropriate treatment (2023, July 5) retrieved 29 April 2024 from <https://medicalxpress.com/news/2023-07-enable-efficient-accurate-diagnosis-postpartum.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--