

## Maternal Stress and Its Effects on Fetal Development

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### DESCRIPTION

Since ancient times, people have believed that a pregnant woman experiences adverse effects during the pregnancy, a few of them believe that severe anxiety leaves a child with a noticeable birthmark. However, the idea that maternal psychological distress has harmful effects on the fetus is the subject of active scientific inquiry today. There is also a resurgence of interest in the period during pregnancy as a staging period for later diseases.

The field of research on prenatal stress has gained even greater prominence and these are the expertise highlights.

1. The mechanisms linking prenatal stress and child development
2. Risk and resiliency inherent to complex developmental models integrating prenatal stress child and maternal biology and the environment across the lifespan.
3. Offering prevention early identification and intervention initiatives that signal a hopeful future.

### Physiological aspects of maternal stress

Complexity of characterizing prenatal stress physiological aspects of maternal stress and distress include the Hypothalamic-Pituitary-Adrenal (HPA) axis and immune functioning, while psychological aspects of stress include exposure to stressful events (e.g. traumatic experiences, daily hassles and chronic stressors), Prenatal stress is a broad and comprehensive category that encompasses cognitive assessments as well as emotional responses, including signs of anxiety and depression. This tells an unidentified common channel that connects the various levels of manifestations. Whatever we use, prenatal stress is currently understood to be the most serious pregnancy problem up to 10% of people with depression has a diagnosis, and up to 20% of those people have serious symptoms. Throughout gestation, anxiety and stress symptoms are also prevalent to varying degrees.

Although more frequent and less geographically specific than previously believed, environmental disasters are difficult to assess furthermore, because prenatal stress is largely studied as a

continuous variable in the data connecting it to unfavourable outcomes, it is challenging to set a safe level of prenatal stress.

### Postnatal adaptation

The next section compiles a body of knowledge on the mechanisms relating prenatal stress and child development that is now well-established. Prenatal stress is likely to have effects across the continuum, reflecting a continuous and dynamic interface and dialogue between the mother and the developing fetus, and the experiences after birth.

From an evolutionary standpoint, prenatal stress affects fetal development, including the HPA axis, developing the fetus for postnatal adaptation. The function of cortisol, a product of the HPA axis that regulates prenatal stress and anxiety, has improved our knowledge of stress hormone systems, fluctuations, susceptibilities, and resilience, as well as its biological components and mechanisms. Measures have sparked interest in additional routes whose interconnected roles are presently being investigated. Emerging technologies and techniques for measuring fetal stress response and placental pathophysiology have made it significantly easier way to understand these pathways. The longer-term effect of fetal stress symptoms can now be tracked through fetal physiological monitoring and fetal MRI work on the placenta's core activities has provided insight into prenatal stress mechanisms since it is a special structure that contains both fetal and maternal cells.

For instance, the role of nutrient transfer, the control of cortisol movement across the maternal-fetal barrier, stress endocrinology, the production of *de novo* serotonin in the placenta, and placental-specific epigenetic changes all show how prenatal stress is incorporated into a "iterative process of psychobiological development that begins even before birth" Prenatal stress is also ingested by epigenetic pathways into the developing Histone modifications, micro-RNA, and DNA methylation are some of the developmental processes that can affect the fetus both favorably and unfavourable even if methylation findings account for the majority of the evidence.

There is a recurring pattern in the relationship between prenatal stress and child development, according to key genes in the

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placenta, the HPA axis, and the serotonin pathways that have been implicated in the fetal programming of the stress response.

## CONCLUSION

These genes downstream effects on immune system performance and neuro development also support this theory. The idea that pregnancy is an immune-challenged condition and that the intrauterine environment controls the expression of immune-related genes makes sense the mother's immune system changes

during pregnancy to accommodate the semi-allograft, which has an impact on both the mother's and fetus immune responses as well as immune diseases. This indicates the earliest beginnings of a biological dyadic "ballet" that begins long before the birth.