

Repercussions of Stress during Pregnancy and Beyond

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Abstract

Stress, anxiety and depression are the disorders of brain but these affect even unborn child (foetuses). Various phobias affect expecting mothers. All these happen due to stress hormone Cortisol which is secreted during stress. This along with cortisol and other stress hormones lead to endocrine disorders like Graves' disease, gonadal dysfunction, psychosexual dwarfism and obesity. Stress can also alter the clinical status of many preexisting endocrine disorders such as precipitation of adrenal crisis and thyroid storm. Stress during pregnancy changes hormonal milieu which affect the fetal environment and results in inflammatory conditions that have implications for maternal and infant health.

Stress, Anxiety and Depression

The feelings of being overwhelmed, anxious, discouraged and depressed are all so similar, it can often be hard to know which is which. While stress is normal, depression and anxiety are more serious and are ongoing conditions that can occur as a reaction to stress. As such, they often require different help than just stress management. As evidenced above, the signs of stress and depression can look alike — but the main difference is that depression is more intense and long-lasting [1]. Feeling stressed for a few days is usually not cause for concern, but feeling symptoms for at least two weeks may mean it's time to do something.

It is common and normal to be anxious about sex for the first time. Things like performance fears, being distressed and upset, and low libido can make people even more anxious and can lead to the avoidance of sex it is also often a side effect of having an anxiety disorder [2]. A person might also have general fear or anxiety about being emotionally close with another person. This can then translate into a fear of sexual intimacy.

There are phobias related to genophobia that might occur at the same time (2):

1. erotophobia -fear of sex or sexual intimacy “
2. nosophobia: fear of getting STDs
3. gymnophobia: fear of nudity (seeing others naked, being seen naked, or both)

4. heterophobia: fear of the opposite sex
5. coitophobia: fear of intercourse
6. tocophobia: fear of pregnancy or childbirth

Endocrinology of stress

During times of stress, the hypothalamus, that connects the brain and the endocrine system, signals the pituitary gland to produce a hormone, which in turn signals the adrenal glands, located above the kidneys [Fig. 1]. This gland produce hormones that help regulate the metabolism, immune system, blood pressure, response to stress and other essential functions [3, 4]. Through a combination of nerve and hormonal signals, this system prompts adrenal glands, located atop your kidneys, to release a surge of hormones, including adrenaline and cortisol. Adrenaline increases your heart rate, elevates your blood pressure and boosts energy supplies. When you have anxiety, your brain sends messengers to your adrenal gland to release epinephrine (adrenaline) into your body. That adrenaline starts preparing your body so that it can react to danger by: Increasing heart rate.

Constricting blood vessels. Common symptoms of stress in women include (1): Physical. Headaches, difficulty sleeping, tiredness, pain (most commonly in the back and neck), overeating/under eating, skin problems, drug and alcohol misuse, lack of energy, upset stomach, less interest in sex/other things you used to enjoy.

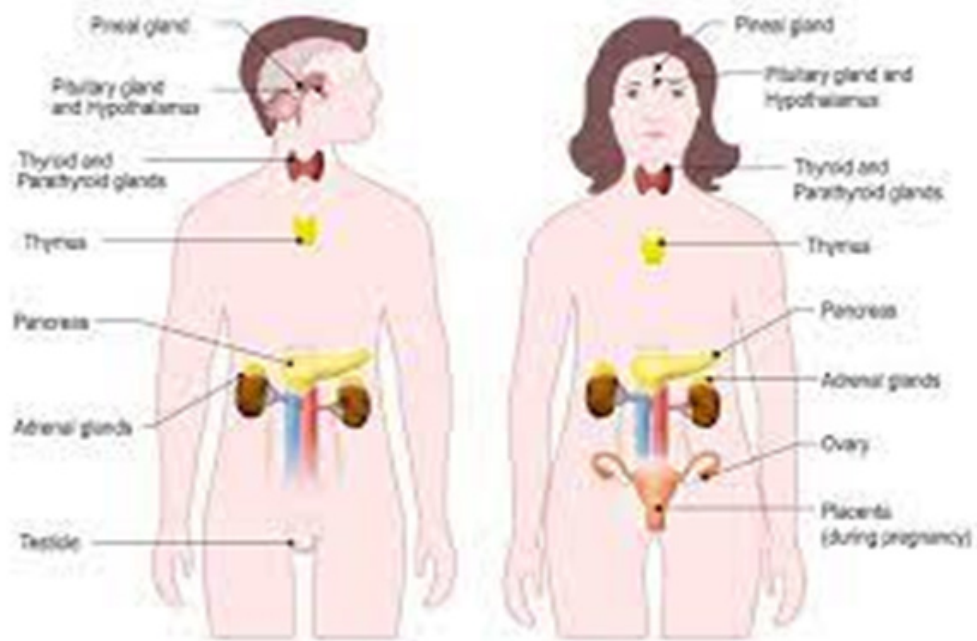


Figure 1: Male and female Location of the Endocrine Glands

Some of these stressful responses can lead to endocrine disorders like Graves' disease, gonadal dysfunction, psychosexual dwarfism and obesity. Stress can also alter the clinical status of many pre-existing endocrine disorders such as precipitation of adrenal crisis and thyroid storm.

Stress during Pregnancy

In humans stress may affect how one responds to certain situations during pregnancy. During pregnancy if the lady feels happy and calm, it allows the baby to develop in a happy, calm environment. However, emotions like stress and anxiety can increase particular hormones in the body, which can affect the baby's developing body and brain [5]. High levels of anxiety during pregnancy have been associated with an increased risk of developing high blood pressure, preeclampsia, premature birth and low birth weight infant. It has been demonstrated that low birth weight in premature infants has been associated with changes in brain morphology. The foetuses of women who reported higher stress levels during pregnancy moved around more in the womb. After birth, these babies scored higher on a brain maturation test, although they were more irritable. The more active foetuses also had better control of body movements after birth. An occasional crying spell isn't likely to harm your unborn baby. More severe depression during pregnancy, however, could possibly have a negative impact on the pregnancy.

Stress and Birth Outcomes

Women who experience high levels of stress during pregnancy have 25-60% higher risk for preterm delivery, even after accounting for the effects of other established risk factors, compared to women with low levels of stress [7]. Stress before and during pregnancy has been linked to low birthweight babies independent of preterm delivery. Increased maternal psychosocial stress is associ-

ated with vascular disorders, such as hypertension and preeclampsia, which are major medical reasons for preterm delivery [8]. These conditions are most common for women who are African American, older, or in first-time pregnancies. Increased maternal psychosocial stress is associated with a variety of unhealthy behaviours such as poor diet/nutrition and smoking, which are also risk factors for preterm birth [8]. Both acute and chronic stress can impact birth outcomes:

1. Acute stressors early in pregnancy have been associated with increased risk for preterm birth. For example, one study found women in their first trimester who lived near the World Trade Centre on 9/11 had shorter pregnancies on average [8].
2. Chronic stress can cause complications such as preterm birth, low birthweight, hypertension and developmental delays in babies [8]
3. Post-traumatic stress disorder coupled with a major depressive disorder has been associated with four times the risk for preterm birth, independent of the effect of prescription drugs [9].

High levels of maternal stress may help explain some of the socioeconomic and racial/ethnic disparities seen in rates of preterm birth because the experience of social disadvantage and minority status is characterized by higher levels of stress. Further research on the short term and long-term consequences of stress is warranted to improve health outcomes for women and children throughout their lifetimes.

Stress during pregnancy changes hormonal milieu which affect the fetal environment and results in inflammatory conditions that have implications for maternal and infant health.

Infants are sensitive to emotion. "By the time newborns are just

a few months old, they recognize the difference between a says Alison Gopnik, Survey results show that stress before and during pregnancy is associated with poor birth outcomes and subsequent poor health outcomes for children. In 2009-2010, nearly three-quarters of women reported they had experienced at least one stressful event in the 12 months prior to the delivery of their child. Common stressful events include moving, serious illness, financial stress, death of a loved one, among others. Maternal stress has been associated with increased rates of infant mortality, low birthweight and preterm birth, all of which may have long term consequences for health and development throughout childhood to adulthood (10). Biologists at the University of Iowa suggest that a mother's response to stress can influence her children and her grandchildren, through heritable epigenetic changes. The legacy of stress exposure not only to their offspring but, if the period of stress to which the mother was exposed was long enough, even to their offspring's children. On the basis of earlier studies that Genes have 'memories' of past environmental conditions that, in turn, affect their expression even after these conditions have changed scientist advocated that maternal stress influences offspring through heritable epigenetic memory

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