# Trauma and an Autism Diagnosis

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Anyone who has had a baby will tell you about their body's psychological, hormonal, and physical changes. Research indicates that pregnant women with an adverse childhood experience (ACE) score of four or higher are more likely to experience negative health experiences later in life. These can range from postpartum depression, anxiety, obsessive-compulsive disorder, post-traumatic stress disorder, and chronic health conditions such as heart disease, chronic obstructive pulmonary disease, and hypertension (Scommegna, 2019). Due to the hormonal and chemical changes in the brain during pregnancy, the hypothesis for this literature review is: "Women/Persons who are pregnant and have an ACE score of four or higher have a higher likelihood of having a child who is on the Autism Spectrum." Research indicates that childhood trauma increases adversity in adults, especially women (Scommegna, 2019). The increase in hormones and stress during pregnancy change how a fetus develops, which leads to an increase in neurodevelopmental diagnoses. Throughout my clinical practice, I have never met a child with Autism Spectrum Disorder (ASD) who did not have a mother with an ACE score of four or higher. A study on the placenta with a mother with adverse childhood experiences shows that the higher the ACE score, the shorter the placental telomere length (TL) was in the babies (Jones et al., 2019).

## How Do ACEs Affect Postpartum Depression?

Professionals determine a person's adverse childhood experience (ACE) score by completing an ACE questionnaire that contains ten questions related to childhood trauma/adversity. The questions include physical and sexual abuse, neglect, illicit drug usage in the home, members of the house going to prison, witnessing the abuse of family members or others in the home, and a history of depression, mental illness, or suicide. ACEs lead to increased

adversity in adulthood and increase the likelihood of developing severe mental health concerns and physical health risks. When a person is pregnant and they have an ACE score of four or higher, research indicates a higher risk of developing postpartum depression, anxiety, OCD, and psychosis (Racine et al., 2021).

## Stress and ACEs

Dr. Nadine Burke Harris is the previous surgeon general of California. One of her goals as surgeon general was to reduce ACEs and toxic stress by half in one generation (California, 2022). A plethora of research supports that ACEs are highly prevalent, increase stress responses in children and adults, and demonstrate high levels of intergenerational transmission (Jones et al., 2019). When an individual experiences something scary or threatening, it activates the stress response releasing cortisol and adrenaline into the nervous system, putting the person into fight or flight. The brain's fear center, or the amygdala, is activated while inhibiting the prefrontal cortex. The prefrontal cortex houses an individual's executive functioning, including attention, judgment, and impulse control. When an individual's body floods with stress hormones, their heart rate increases, their blood pressure and blood sugar rise, and the immune system activate along with many other effects. While an individual's stress response is needed and helpful in many situations, when a child suffers prolonged and severe stress or adversity, research shows it leads to the overactivity of the child's stress response. Children require an adult's nurturing and bonding to shut off their stress response and restore normal functioning. When the child does not have an adult to provide safety for them, their fear center and stress response become overactive.

When a woman is pregnant and is under toxic and prolonged stress, it changes how her baby's brain develops. According to Children's National Hospital, a woman's elevated anxiety, depression, and stress during pregnancy significantly alter the fetal brain for up to 18 months

(Innovation District, 2022). Some of the changes include internalizing and dysregulation behaviors in the child. The finding also suggests that ongoing psychological distress following the child's birth may influence parent-child bonding and infant self-regulation behaviors (Innovation Direct, 2022). Regardless of a woman's socioeconomic status, "about one of every four pregnant women suffers stress-related symptoms" (Innovation Direct, 2022).

There are different categories of stress that a person can experience. Positive stress, tolerable stress, and toxic stress are these categories. Positive stress is when something good happens. It causes stress, such as a wedding, but it is good stress. Tolerable stress is just as it states. It is a tolerable level of stress that does not necessarily activate the stress response system in the brain. Toxic stress is prolonged and frequent, causing prolonged activation of the stress response systems in an individual, which can "disrupt the development of brain architecture and other organ systems, and increase the risk for stress-related disease, and cognitive impairment" (Phang, 2017).

## What is Autism?

Autism Spectrum Disorder (ASD) is a severe neurodevelopmental disorder that affects more people than previously identified. As of 2018, 3.7% of boys and 0.9% of girls are diagnosed with Autism yearly (Maenner et al., 2018). According to the study, 23.0 per 1000 or 1 in 44 children are diagnosed with Autism (ASD) up to age eight. ASD is 4.2 times more likely in males than females. The prevalence of a diagnosis was similar among racial and ethnic groups except for American Indian/Alaska Natives (AI/AN). The AI/AN population has a higher incidence than non-Hispanic (White) children, while the Hispanic community has a lower incidence of diagnosis than white children (Maenner et al., 2018). For many years, many thought

Autism to be largely genetic; however, recent studies support that environmental factors play a significant role in children developing Autism (Kingery, 2016).

## Maternal Adversity and Autism

We know how prolonged stress affects mental and physical health. While many mothers who experience a high amount of adversity during pregnancy do not give birth to a child with Autism, there are comparable numbers of mothers who do give birth to a child with Autism. A study involving multiple families and mothers with children who have Autism had blood tests completed (Kingery, 2016). Interviews with the mother about their stress during pregnancy, such as moving, loss of job, or divorce, helped to identify a stress-sensitive gene. The stress-sensitive gene known as 5-HTTLPR regulates the serotonin neurotransmitter. If there is a variation of the gene present, it produces an increased reaction to stress. Women report that their anxiety increased during the second and third trimesters, causing more of an environmental change for them and the baby (Kingery, 2016).

A 2018 study of 200,000 mother-child pairs states that the level of depression present has more impact on a child developing Autism than the use of antidepressants (Lovering, 2022). The study also shows that treated and untreated depression had a higher incidence of a child developing Autism than the use of antidepressants (Lovering, 2022). While there is a debate on whether using antidepressants during pregnancy increases the likelihood of an Autism diagnosis, the research proves this is not an issue. As providers, we must provide the best care for the mother during pregnancy, often including antidepressants. Studies prove that increased stress during pregnancy links to more incidences of a child being born with Autism than the use of antidepressants during the pregnancy. Research also indicates that stress during 25-28 weeks has the highest impact on the fetus's development(Lovering, 2022). The nurses' health study from

2016 states that a person who endures partner abuse two years before pregnancy, during pregnancy, and after pregnancy has a higher chance of the baby developing Autism later (Lovering, 2022).

Within the last year, studies have linked Autism to genetic factors where 50-95% of the likelihood of an autism diagnosis is genetic (Moyer, 2022). While environmental factors are a causative factor, the mother's access to and consumption of folic acid or folate links to how neurodevelopment begins during conception and the first weeks of pregnancy (Moyer, 2022). Genes that govern the brain wiring turn on and off during the first few days following conception, and folate helps brain development during the first few days following conception and can have lasting effects (Moyer, 2022).

***Final Thoughts.***

Research supports that genetic and environmental factors, including the intra-uterine environment (prenatal environment), impact a child's diagnosis of Autism. When a mother suffers from childhood adversity or a high ACE score, it leads to increased hardship in the mother's life. Adversity significantly increases maternal stress, further impacting the fetus's neurodevelopment and leading to higher incidences of an autism diagnosis in the child.

Monitoring toxic stress during pregnancy reduces the risk of an Autism diagnosis. It will also reduce the risk of maladaptive behaviors in children, deterring them from being diagnosed with other dysregulation disorders. One way we as providers can improve is to screen for ACEs earlier. In this context, earlier would mean when the woman becomes pregnant we should screen for ACEs. By screening upon conception providers can set up a better treatment plan during pregnancy to offset some of the environmental factors. A second recommendation is to gain knowledge of the environmental factors and ensure the patient (mother) knows how to manage

her environment to have a better pregnancy and not affect the baby's neurodevelopment as much as possible. By improving the mother's coping skills and knowledge of toxic stress and effects, we offer a higher quality of care and improve the mother's quality of life during pregnancy and for the baby upon birth.

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