Understanding the Hereditary and Environmental Factors Leading to Substance Use Disorders

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Is Addiction Genetic?

Some people will use alcohol or other drugs a few times before experiencing severe symptoms of addiction. Alternatively, some people will engage in heavy substance use for long periods and never suffer the powerlessness, confusion, and frustration that comes with addiction. Part of this difference is explained by the genetic impact on addiction.

How is it that a portion of the population is prone to substance use disorders, and the rest are much more resistant to the influence of tolerance, physical dependence, and psychological addiction? What role do genes play? Is addiction genetic?

The Impact of Heredity with Addiction

Everyone receives half of their unique genetic code from their mother and the other half from their father, but when investigating the human genome, researchers found that all humans share about 99.9% of the same DNA. It is in the final 0.01% that holds all the differences.

Genes dictate countless physical features and more subtle aspects of life. Your hair color, your height, your personality, and even your tastes are controlled by your biology. Genetics also help manage the diseases and conditions a person is at risk of developing at birth or later in life.

Some diseases, like sickle cell anemia and cystic fibrosis (CF), are affected by only one gene, while others are much more complicated as they are affected by many genes. Unfortunately, addiction is one of these complex conditions influenced by multiple genes. Since the issue is so concerning, experts are currently working hard to better understand the interaction of genes responsible for becoming addicted and staying addicted to alcohol and other drugs.

How is Heredity Involved in Addiction?

Genes affect a person’s tendency to become addicted. There are three main contributors that control this process:

- **Temperament**. A person’s temperament influences their decision-making skills, impulsivity, and risk-taking behaviors. People with certain temperaments will be more interested in trying substances and more susceptible to using them repeatedly.
- **Pharmacokinetics**. This term refers to how addictive substances interact in the body. It controls how the body absorbs, breaks down, and rids itself of a substance. Genes control this trait in each person.
- **Pharmacodynamics**. Similar to the previous term, this refers to how intensely a person responds to a

drug. Based on their inherited pharmacodynamics, a person could have a stronger or weaker reaction to the same dose of the same substance compared to someone else.

Another way genetics can influence addiction is through the predisposition to other mental health conditions. People with depression, anxiety, bipolar disorder, and other psychological disorders may resort to alcohol and other drugs as a way to decrease their symptoms or improve their overall well-being. Of course, substance abuse is a negative coping skill, but it may seem appealing to many at the time.

Does Heredity Completely Control Addiction?

Genes, biology, and heredity surely play a factor in addiction, but it may not be as significant as some believe. In fact, about 50% of a person's risk of becoming addicted to substances comes from heredity. So, to answer the question "is addiction genetic?" the answer is, partially.

The other half of the risk is attributed to environmental risk factors. Often in questions like this, people try to determine if nature (heredity) or nurture (environment) plays a larger role, but when it comes to addiction, nature and nurture share the influence.

The Role of the Environment in Addiction

The other side of determining the risk of addiction comes from environmental factors. Called risk factors, these items represent the way family, peers, and their physical surroundings affect someone's probability to become addicted.

Some of the most significant environmental risk factors include:

- **Lack of parental supervision**. When parents are distracted, absent, or abusive, their children will experience higher rates of substance abuse.
- **Peer substance use**. Peer pressure is a significant risk factor, but in some cases, just being around others using substances can increase the likelihood of someone using as well.
- **Drug availability**. If a person is living in an environment where drugs are present and available, they are much more likely to use. In places without such availability, rates of addiction decrease.
- **Low income or high crime areas**. When the surrounding community experiences poverty or high crime, addiction rates increase.

The opposites of these risk factors are protective factors. People with involved parents and sober friends who live in safe communities where drugs are not readily available will receive some level of protection against the influence of substances and addiction.

Minimizing the Influence

The impact of heredity on addiction is important, but it is often invisible. Since no one can see their genes or make changes, they must take preventative efforts to minimize the unwanted influence of their biology.

One way to complete this is by making an honest review of family history. Do addiction issues run in the family? What about mental health complications? Is there a history of domestic violence, physical abuse, or suicide?

By acknowledging the family tendencies, a person can take more active steps to avoid drugs and address any underlying mental health issues that could result in substance abuse. Heredity can influence addiction, but each person can shrink the impact to live the happiest life possible.