



DrugFree@WorkPlace

Genetics and Addiction

Have you heard it said that addiction "runs in families"? Can drug addiction and alcoholism really be passed down from parent to child by way of genes?

Substance Use Disorders (SUD) occur due to a complex interaction of genetics and the environment, and there is a proven inherited component to addiction. U.S. government research has shown that heredity is responsible for about 40%-60% of an individual's predisposition to addiction, making family history an often-reliable indicator of risk for substance abuse.

One of the most comprehensive studies on this issue was completed recently. The study involved more than 150 researchers from institutions around the world. The research was supported by the National Institute on Drug Abuse, the National Institute on Alcohol Abuse and Alcoholism, the National Institute of Mental Health, the Eunice Kennedy Shriver National Institute of Child Health and Human Development, and the National Institute on Aging, all part of the National Institutes of Health (NIH).

In summary, the research study found that there is no such thing as an "addiction gene," but a combination of many different genetic and biological factors can make a person more, or less vulnerable to addiction. Primarily, the genetic connection to addiction comes through inherited levels of dopamine. Higher levels of dopamine can result in poor impulse control and drive people to addictive behaviors.

The researchers also found that children with the genetic signature for addiction were more likely to be related to someone who has a substance use disorder. These children were more likely to show impulsive personality traits and disrupted sleep patterns, highlighting the possible role of these genes in early life behaviors, even before substance use occurs.

Having a smaller amygdala (the part of the brain that processes emotions) can also make one more prone to develop addictions, and amygdala volume is heritable.

Nature or Nurture?

While it is true that the initial decision to use drugs or alcohol is a choice, once a person begins using drugs or alcohol, he cannot control his body's genetic response.

Does all of this mean that a child of drug-addicted or alcoholic parents will always become an addict? No, of course not. If the child never uses drugs or alcohol, it would be impossible for him or her to develop a substance use disorder. Also, because environmental factors can impact the way genes express themselves, if the child of addicts is raised in a drug and alcohol-free home (by grandparents, for example), then the drug-free environment could suppress the gene's activities and protect the child from addiction.

In some cases, how long, and how often a person uses alcohol or drugs can also affect the possibility of addiction developing. Studies have shown that repeated exposure to addictive substances can cause the dopamine pathway in the brain to adapt to the effects of these substances, requiring more of the substance in order to receive the same amount of reward.

More Effective Therapies

The good news is that the most recent research may result in new ways to treat genetic addiction. As part of the study mentioned previously, the researchers compiled a list of approved and investigational pharmaceutical drugs that have the potential to be repurposed to treat substance use disorders because the drugs may target the effects of a newly discovered genetic signature associated with addiction. The list includes more than 100 drugs to investigate in future clinical trials, including those that can influence regulation of dopamine signaling.

The following suicide prevention information, while provided by the Georgia Department of Behavioral Health and Developmental Disabilities, will also be helpful to those in states other than Georgia. All online resources listed are available to users nationwide.

September is National Suicide Prevention Month. Though our culture has become more open to discussing the topic, suicide remains a leading cause of death in the U.S., and the suicide rate is increasing each year. Recent initiatives like the adoption of 9-8-8 as the national Suicide & Crisis Lifeline, new safe messaging standards in journalism, as well as a push by many agencies to offer more gatekeeper trainings, like QPR-Question Persuade Refer-and Mental Health First Aid, have helped to raise awareness about suicide and reduce the pervasive stigma that surrounds the topic.

However, the discourse surrounding suicide is usually focused on the question of *why* people die by suicide, which delves into various mental health conditions, adverse childhood experiences, substance use issues, and other risk and precipitating factors that by themselves come with a great deal of stigma. Other initiatives like limiting access to lethal means of suicide, which address the question of *how* people die by suicide, are also fraught with stigma as they tend to stir political tension surrounding firearm ownership. These approaches are incredibly important to those working in the suicide prevention field but can be a lot to ask the general populous to focus on in their personal and professional lives, even during Suicide Prevention Month.

Another approach to suicide prevention that gets far less attention outside the suicide prevention field are initiatives that increase protective factors and help reduce people's risk of suicide. These initiatives ask the question of *why not* and focus more on positive factors in a person's life that reduce their risk of suicide. These factors are usually directly tied to a specific risk factor that they help to reduce. One of the greatest merits of this approach to suicide prevention is that protective factors can be increased through the positive actions of friends and loved ones of at-risk individuals. Moreover, a person at heightened risk for suicide can also work to increase their own protective factors by building up positive support structures.

So, what are some of these protective factors? Though, like risk factors, there are some protective factors that are specific to different groups and cultures, there are also many that are universal. One important protective factor is the development of healthy coping skills, which can help mitigate some of the risky behaviors that come with negative coping skills like increased substance use that many Americans turn to during times of increased stress or when faced with a tragic event. Another important protective factor is belonging to positive social groups which can help to create a stronger sense of belonging and increase support during stressful times, reducing social isolation. Religious and spiritual beliefs that discourage suicide can be a protective factor for many individuals but can also lead to increased risk when they cause individuals to be judged and/or ostracized from their families and communities due to their sexuality. Conversely, belonging to an accepting and supportive family and community can be a major protective factor.

Other societal factors like access to healthcare, education, transportation, and even healthier food options can be a major protective factor as all of these can contribute to less stress and better health. This can be seen clearly in data which shows that suicide rates are twice as high in rural communities where access to the goods and services are limited. Though there isn't always the option to pull up stakes and move, finding any way to increase your overall health and wellbeing and find a sense of belonging and acceptance will help tip the scales towards a more positive life experience. This can help you be in a better position to handle the many unavoidable stressors that come about in life.

9-8-8 is the new, three-digit number for the National Suicide Prevention Lifeline (NSPL). It is now available nationwide and it's a direct connection to caring support for anyone in mental health distress.

If you or someone you know is struggling or in crisis, help is available. Call or text 988 or chat 988lifeline.org.

To learn more about suicide prevention, visit the DBHDD website at:
<https://dbhdd.georgia.gov/suicide-prevention>.

Or contact the Suicide Prevention Director, Rachael Holloman, at:
rachael.holloman@dbhdd.ga.gov.