

Adult ADHD & Substance Use Disorders: What's the Deal?

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The overlap between ADHD and Substance Use Disorders (SUD's) has been an area of increasing clinical, research, and public health interest. ADHD has a high co-morbidity with SUD's, and both disorders have profound social, psychological and economic consequences.

The high heritability of ADHDs and SUD's seen in both twin and adoption studies suggests that there are common genes between the two. The high co-morbidity between the two also suggests that some shared underlying neurobiological factors may be involved.

While ADHD and SUD's are distinct disorders, they often share an under-function of the neurotransmitter, dopamine. Also, all addictive drugs strongly stimulate the neurotransmitter dopamine, through which they stimulate the reward circuit, as well as learning, memory, and behavioural circuits.

Impaired dopamine neurotransmission is associated with diminished perception of reward, worsening cognition, and impaired behavioural inhibition. This makes life boring, worsens the ability to recognise future negative consequences, and diminishes the ability to say "no" to an enticing distraction. This can be seen in both disorders. Also, the cognitive dysfunction associated with ADHD may decrease the patient's ability to estimate the negative consequences of substance abuse and to delay immediate gratification from drug or alcohol use.

Those with ADHD have an over six times higher risk of developing a SUD, compared to those without ADHD. Those with ADHD experience an earlier age of onset and a longer duration of SUD's. Those with both ADHD and SUD may take longer to achieve remission and are likely to have a longer course and poorer outcome. ADHD is a risk factor for SUD's. Up to 45% of adults with ADHD have a history of alcohol abuse or dependence, and about a third have a history of illegal drug abuse or dependence.

Those with ADHD also experience earlier onset and higher rates of tobacco smoking by mid-adolescence. Biological mechanisms may underlie both ADHD and nicotine dependence. It is now known that children of mothers who smoked during pregnancy are at a much greater risk of ADHD. Evidence suggests that nicotine improves attentiveness and performance deficits amongst those with ADHD. This provides a self-medicating rationale, namely, that nicotine increases dopamine release in the brain.

Those with ADHD are more vulnerable to SUD's if they also have a co-morbid condition, such as Oppositional Defiant Disorder, Bipolar Disorder, or Conduct Disorder. Those with ADHD and co-morbid Conduct Disorder are estimated to be almost nine times more likely to develop an SUD before the age of 18, compared with those with ADHD, alone. Impaired executive functioning, behavioural dyscontrol, impulsivity and peer rejection are also common in both ADHD and Conduct disorder, and therefore, may increase the risk of developing SUD's in those who have both conditions.

Detecting SUD's in those with ADHD can be challenging. Ideally, the best time to assess for ADHD symptoms is after prolonged abstinence from any influencing substance. However, in most clinical situations this is not practical. Perhaps a better approach is the longitudinal assessment for ADHD symptoms. Detecting evidence of early childhood onset of ADHD symptoms before the person began using substances, and/or that persisted through periods of prolonged abstinence from substances, can be helpful in differentiating the proper diagnosis.

Many clinical experts suggest that adults with ADHD and active SUD be treated for the SUD until a period of sobriety persists prior to initiation of specific treatment for ADHD. However, this approach may not serve many such persons, as they may relapse prior to obtaining ADHD treatment. It would appear that the most effect treatment option is one that uses the most effective treatment modalities available, including both behavioural and medical therapies, along with close supervision and monitoring.

While stimulant medication may improve retention in addiction treatment, and in some cases, may decrease harm from substance use, stimulants do not appear to have been particularly effective in decreasing drug use, per se. This may be because the prevalence of co-morbidity is high in ADHD, there

is a relatively high rate of treatment drop out in this population, as well as non-compliance with taking the stimulant medication.

Some researchers have expressed concern that exposure to stimulant medication early on in childhood could predispose those with ADHD to future substance abuse. The hypothesis, here, is that early exposure to stimulants could increase the risk of later SUD's by "priming" the brain, which then becomes more receptive to illicit drug exposure.

Recent research suggests that children with ADHD who were treated with stimulant medication until adolescence were almost six times less likely to develop SUD's, compared with those who did not receive stimulants. However, this protective effort diminished when such persons were followed into adulthood. One possible explanation for this is that stimulant medication may actually delay but not prevent SUD's; the other is that by adulthood, loss of parental supervision may lead to poor medication compliance and increased susceptibility to SUD's.