

Risk Behaviors in Substance Use Disorder Female Patients with or without ADHD Symptoms

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

سببناك لا علم لنا
إلا ما علمتنا إنك أنت
العليم العظيم

صدق الله العظيم

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List of Abbreviations

Abb.	Full term
<i>6-OHDA</i>	<i>6-Hydroxydopamine</i>
<i>ACC</i>	<i>Anterior Cingulate Cortex</i>
<i>ADHD</i>	<i>Attention-Deficit Hyperactivity Disorder</i>
<i>AMPH</i>	<i>Amphetamine</i>
<i>APA</i>	<i>American Psychiatric Association</i>
<i>ASRS</i>	<i>ADHD Self-Report Scale</i>
<i>BBV</i>	<i>Blood-Borne Virus</i>
<i>BECs</i>	<i>Blood Ethanol Concentrations</i>
<i>BZ1</i>	<i>Benzodiazepine Subtype 1</i>
<i>BZO</i>	<i>Benzodiazepines</i>
<i>COC</i>	<i>Cocaine</i>
<i>CUDs</i>	<i>Cannabis Use Disorders</i>
<i>DA</i>	<i>Dopamine</i>
<i>DAT</i>	<i>Dopamine Transporters</i>
<i>GABA</i>	<i>Gamma-Aminobutyric Acid</i>
<i>HD</i>	<i>Hyperkinetic Disorder</i>
<i>IQR</i>	<i>Interquartile Range</i>
<i>MA</i>	<i>Methamphetamine</i>
<i>MVA</i>	<i>Motor Vehicle Accident</i>
<i>OPI</i>	<i>Opiate</i>
<i>SCID-I</i>	<i>Structured Clinical Interview for DSM-IV Axis-I Disorders</i>
<i>STDs</i>	<i>Sexually Transmitted Diseases</i>
<i>SUD</i>	<i>Substance Use Disorder</i>
<i>THC</i>	<i>Tetrahydrocannabinol</i>
<i>TRA</i>	<i>Tramadol</i>
<i>WHO</i>	<i>World Health Organization</i>

ABSTRACT

Background: The intersection of Attention deficit/Hyperactivity Disorder (ADHD) and substance use disorders (SUD) in adolescents and adults has been an area of increasing awareness. It was found that individuals with both diagnoses have an earlier onset, a longer course, and greater severity, with more relapses and greater difficulty remaining abstinent. Although Impulsivity and consequent risk-taking are associated with both disorders, there are little data on the impact of comorbid ADHD on the likelihood and frequency of risk-taking behaviour among individuals with SUD especially among female patients.

Aim of the Work: To

- (1) Assess females seeking treatment for SUDs for the presence of comorbid ADHD.
- (2) Investigate the association between severity of substance use disorder and co-occurring ADHD symptoms.
- (3) Examine related risk behaviours in females seeking treatment for SUD with co-occurring symptoms of ADHD.

Methodology: 30 participants with diagnosis of SUD (15 with co-occurring ADHD symptoms) were administered a semi structured interview assessing demographics, drug use and sexual history, psychiatric history, self-reported adult ADHD symptoms (ASRS) and Addiction Severity Index (ASI), Barrett impulsivity scale and aggression and hostility scale for related risk behaviours.

Results: Those with co-occurring SUD and ADHD symptoms were more likely to report early onset (<15 years) for illicit drug use and (<13 years) for nicotine use. ADHD symptom status was not independently associated with impulsive, aggression or hostility risk-taking, but was an independent predictor of having first sexual activity at younger age (<16 years)

Conclusion: Presence of adult ADHD symptoms significantly affects the course of substance use disorder in females. Adult SUD with ADHD females have an earlier age of smoking as well as earlier age of onset of substance use, also earlier age of first sexual activity compared to those without ADHD.

Keywords: *Attention Deficit Hyperactivity Disorder - Substance Use Disorder- Risk behaviors*

INTRODUCTION

Substance use disorders (SUD) are among the most common, disabling, and costly health problems in the U.S. (*Grant et al., 2004; National Institute on Drug Abuse, 2011*).

It is estimated that addicts in Egypt are spending \$2.9 billion on drugs each year. Estimates on how many people are addicted to opiates, cannabis, amphetamine-type stimulants or heroin vary greatly, according to a 2007 study. A 2007 report stated that 8.5 percent of Egyptians - or six million people - are addicted to drugs (*Narcon on Drug Information Department, 2007*).

SUD is characterized by a pattern of continued pathological use of a medication, non-medically indicated drug or toxin, which results in repeated adverse social consequences related to drug use, such as failure to meet work, family, or school obligations, interpersonal conflicts, or legal problems. Medically, physiologic dependence requires the development of tolerance leading to withdrawal symptoms. Both abuse and dependence are distinct from addiction which involves a compulsion to continue using the substance despite the negative consequences, and may or may not involve chemical dependency (*NAMI, 2013*).

There are many reasons for why people start using substances, continue to use them and eventually become dependent on them. Speaking broadly, three core reasons for

substance use can be distinguished: (a) positive reinforcement (i.e. instant pleasure and euphoria provided by substance use); (b) negative-reinforcement (i.e. instant relief from feelings of anxiety, depression or insecurity provided by substance use and thus self-medication); and (c) habitual/compulsive substance use (i.e. substance use is no longer associated with positive or negative reinforcement, but has become an automatic behaviour (e.g. chain smoking) (*Kronenberg et al., 2014*).

Mental disorders can frequently co-occur with a substance use disorder (SUD) or some other disorder. Such co-occurrence is often referred to as a dual diagnosis, which can itself refer to either life-time co-occurrence or current co-occurrence. For clinical purposes and needs assessment, current co-occurrence is more important than life-time co-occurrence (*Murthy et al., 2012*).

Attention-deficit hyperactivity disorder (ADHD) is one of the most frequent psychiatric disorders experienced by children and, according to epidemiological studies, can be persistent and affect between 35 and 80% of adults with at least one or more symptoms of ADHD. Prevalence of adult ADHD in a recent epidemiological study was reported to be 4.4% among adults in the USA (*Barkley et al., 1997; Kessler et al., 2006*).

Comorbidity with ADHD is present among ~75% of adults with this condition and includes several psychiatric disorders, including substance-use disorders (SUD) at rates

reaching 15-45% (*Biederman et al., 1993*). Different models of comorbidity are generally proposed to link different psychiatric illnesses to SUD. First, psychiatric disorders may occur in the context of withdrawal from SUD or as a result of chronic intoxication. Psychiatric disorders may be considered as a risk factor for SUD or substances of abuse may be used as a self-medication to reduce symptoms of the psychiatric disorder. Also, both the psychiatric disorder and SUD may have either a common genetic predisposition or a common environmental risk factor. Finally, SUD may act as a modifying factor through the course of an already present psychiatric disorder (*Biederman et al., 1993; Charach et al., 2011*).

Patients with a substance use disorder (SUD) and co-occurring ADHD initially started to use alcohol and/or drugs to cope with ADHD associated stress. Substance use may initially ameliorate the symptoms and the related stress but it may worsen the situation later (*Cooper et al., 1995, Heilig et al., 2010*).

Attention Deficit Hyperactivity Disorder (ADHD) is consistently over-represented among substance use disorder (SUD) populations, particularly when symptoms persist through adolescence into adulthood (*Kollins et al., 2007*). ADHD is not only a risk factor for the development of SUDs, but is associated with an earlier onset and more severe course of SUD (*Chilcoat et al., 1999*), as well as poorer SUD treatment prognosis (*McAweeney et al., 2010*).

SUDs are associated with a number of risk-taking behaviours, including unsafe sexual practices (*Feldstein et al., 2006*), accidental injury (*Darke et al., 2013*) and risky driving behaviours (*Banks et al., 2004, Kelly et al., 2004*). Similarly, ADHD is an independent predictor of an earlier initiation of sexual activity, more sexual partners and a higher frequency of casual, unprotected sex (*Abrantes et al., 2006*). An increased risk of motor vehicle accident (MVA) mortality observed for all types of SUD (*Callaghan et al., 2013*). Among illicit drug users, mortality rates due to trauma far exceed those of the general population and MVAs are a major contributor to the excess mortality in this group (*Darke et al., 2007*). Children with ADHD also have higher rates of traumatic injury (*Xiang et al., 2005*) and are more likely to be involved in high-risk activities when injured (*Badger et al., 2008*). ADHD in late adolescence and adulthood, particularly when hyperactive-impulsive symptoms are present, is associated with high-risk and aggressive driving (*Cox et al., 2011*), more driving offences and license violations, and a higher rate of MVAs (*Barkley et al., 1996 and Jerome et al., 2006*). Moreover, particular concern has been expressed about the increased risk of blood-borne virus (BBV) transmission through unsafe drug injection in SUDs (*Degenhardt et al., 2012*).

Previous studies of driving impairment and risk behaviours associated with ADHD (*Barkley, 2004*) suggest that those with ADHD, adolescents and young adults in

particular, use alcohol and illicit drugs more frequently and are greater risk-takers more generally than their non-ADHD counterparts and that it is these differences, rather than the direct effects of ADHD, that may mediate the effects of ADHD on driving outcomes. The prevalence of risky driving behaviours and adverse consequences was high irrespective of ASRS screening status, symptoms of ADHD were independently associated with even greater risk-taking. With substance use being a major contributing factor to MVA trauma (*Darke et al., 2007 and Movig et al., 2004*).

Although increased risk-taking among discrete ADHD and SUD populations has been widely demonstrated, very little is known about the association between adult ADHD and risk-taking among those with SUD – a group already more likely to engage in high levels of drug-related, sexual and driving-related risk behaviours.

AIM OF THE WORK

- (4) Assess females seeking treatment for SUDs for the presence of comorbid ADHD.
- (5) Investigate the association between severity of substance use disorder and co-occurring ADHD symptoms.
- (6) Examine related risk behaviours in females seeking treatment for SUD with co-occurring symptoms of ADHD.

Chapter 1

SUBSTANCE USE DISORDER

Substance use disorder is a chronic, relapsing disorder in which compulsive drug-seeking and drug-taking behavior persists despite serious negative consequences, the recurrent use of alcohol and/or drugs causes clinically and functionally significant impairment, such as health problems, disability, and failure to meet major responsibilities at work, school, or home. Addictive substances induce pleasant states (euphoria in the initiation phase) or relieve distress. Continued use induces adaptive changes in the central nervous system that lead to tolerance, physical dependence, sensitization, craving, and relapse (*NIDA, 2016*).

According to the DSM-5, a diagnosis of substance use disorder is based on evidence of impaired control, social impairment, risky use, and pharmacological criteria (*APA, 2013*).