

# Prevalence and Quality of Life in Adult ADHD with Substance Use Disorders

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**Abstract:** *This study aims to estimate the prevalence of adult Attention Deficit Hyperactivity Disorder (ADHD) amongst patients with Substance Use Disorders, assessing quality of life with substance use disorders. 200 patients with substance use disorders were assessed on Adult ADHD Self-Report Scale (ASRS-V1.1), Adult ADHD Quality of Life Questionnaire (AAQoL), DAST 10, Alcohol Use Disorders Identification Test (AUDIT) scale. The prevalence of Adult Attention Deficit Hyperactivity Disorder with Substance Use Disorders was more in younger age group with male predominance. The quality of life among Adult Attention Deficit Hyperactivity Disorder patients who screened positive was worse compared to other patients. Regular screening with scales such as ASRS symptom checklist enables detection of this condition. If this co-morbid condition is identified, then it should be treated appropriately.*

**Keywords:** ADHD, Substance use disorder, Prevalence, Quality of life

## 1. Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most common mental health disorders affecting children and adolescents characterized by hyperactivity, impulsivity and inattention.<sup>1,2</sup> Adult ADHD suffer more because of their chaotic lifestyles, poor time management, motivational difficulties, mood liability, stress sensitivity, poor concentration and impulsive behavior.<sup>3</sup> prevalence of ADHD in children of 5% to 10% and persistence rate of 40% to 60% into adulthood suggest ADHD may affect as many as 2-4% of populations.<sup>4</sup>

One found a positive association of inattentive symptoms with alcohol use and cannabis misuse. Early onset SUD is associated with elevated rates of academic failure, suicidal behaviors, and other dangerous behaviors. The misuse of marijuana, alcohol, or the combination of the two is the most common substances of abuse in adolescents with ADHD. Follow-up studies of children with ADHD into adulthood suggest that there is an increased risk of substance used disorders. Early diagnosis and treatment of ADHD is the preventive measure for habit-forming illnesses.<sup>5,6</sup> Present study was conducted to estimate prevalence of adult ADHD amongst patients with substance use disorders.

## 2. Literature Review

The first coherent description of ADHD was by George Still in the Coombs lectures of 1902. He described an 'abnormal defect in moral control in children.' Moral control was defined as 'the control of action in conformity with the idea of the good of all that can only exist when there is a cognitive relationship to the environment'.<sup>7</sup> In the 1950s, it was modified to 'hyperactive child syndrome' and then 'hyperkinetic reaction of childhood' in the Diagnostic and Statistical Manual of Mental Disorders (DSM)-II in 1968. Each of these labels and sets of criterion were focused exclusively on children and placed the greatest emphasis on motoric hyperactivity and overt impulsivity as hallmarks of the disorder.<sup>7</sup>

In childhood, symptoms often become evident in the home or school environments, Children with ADHD more often experience failure in educational or academic settings,<sup>8</sup> and poor or deviant social relationships<sup>9</sup> compared to same-aged children and un-affected siblings.

It is suggested that multiple genetic and environmental factors contribute to the age inappropriate and impairing symptoms of hyperactivity, impulsivity and inattention in affected individuals.<sup>10,11</sup>

In addition to the strong genetic predisposition to ADHD, environmental factors account for an estimated 10% to 40% of the variance in liability to the disorder.<sup>12</sup> Findings from imaging and pre-clinical studies have resulted in plausible biological theories indicating how exposure to addictive substances in utero may influence brain development.<sup>13,14</sup> It is well established that both non-stimulant (i.e. atomoxetine (ATX)) and central stimulant medication (i.e. MPH, amphetamine and/or dexamphetamine) effectively reduce the core symptoms of ADHD.<sup>15</sup> Non-pharmacological treatments, most commonly cognitive behavioural-based interventions is an important component of the multimodal ADHD treatment.

According to worldwide estimations, almost 5%, i.e. 246 million individuals, aged 15 to 64 used illicit drugs during 2013.<sup>16</sup> There is a robust association between ADHD and SUD, Individuals with ADHD are at increased risk of developing SUD and the prevalence of ADHD among treatment seeking SUD patients is almost 25% compared to estimations of about 2.5% in the general adult population.<sup>17,18</sup>

Results from imaging studies show reduced dopamine receptor activity in subcortical brain areas of individuals with ADHD.<sup>19</sup> This commonality in action has led to the view that the dopamine system plays a pivotal role in the neurobiology of both ADHD and SUD. Wilson JJ et al<sup>20</sup>(2005) observed an increased recognition of the common co-morbidity of attention-deficit/ hyperactivity disorder

(ADHD) and substance use disorder (SUD) among adolescents and adults. Suhas Ganesh et al<sup>21</sup> (2017) studied prevalence adult attention deficit hyperactivity disorder in patients with substance use disorders. Adult ADHD self-report scale symptom checklist was administered in 240 patients with SUD. The prevalence of ADHD and the difference in scores in early onset and late onset dependent groups of SUD patients were calculated. Among the 240 patients with SUD, 135 (56.25%) screened positive for "likely ADHD" and 52 (21.7%) for "highly likely ADHD."

Jhambh I etal<sup>22</sup> (2014) study the prevalence of ADHD among college students and psychological problems related to ADHD. A total of 237 students were recruited from various medical, engineering, and commerce and arts colleges of Chandigarh, India. They were administered the Adult ADHD Self Report Scale v1.1(ASRS) and the Wender Utah Rating Scale (WURS) to diagnose adult ADHD. A total of 13 students (5.48%) fulfilled the criteria for adult ADHD. These students experienced significantly higher emotional instability and low self-esteem than those without ADHD (N = 224). The occurrence of psychological problems, depression, social problems, and substance abuse was comparable in students with and without ADHD. Prompt detection and management of ADHD in college students may help them deal with these problems effectively.

### 3. Method

This was an observational study conducted among patients attending the Psychiatric OPD/IPD at Bharati Vidyapeeth (Deemed to be University) Medical College and Research Centre; a private tertiary care hospital in Pune, India. A total of 200 patients all above the age of 18 years, with psychiatric diagnosis of substance use disorders as per International Classification of Diseases and Health Related Problems- 10 (ICD-10) were included. Patients having pre-existing psychiatric illnesses and other co-existing medical or surgical illnesses were excluded. A written informed consent was taken from all participants.

After Obtaining Sociodemographic details of the participants like age, gender, education, occupation, relation with patient, family type, marital status, etc., for accessing the symptoms Adult ADHD Self-Report Scale (ASRS-V1.1) which is a Symptom Checklist is an instrument consisting of the eighteen DSM-IV-TR criteria, Six of the eighteen questions were found to be the most predictive of symptoms consistent with ADHD. Adult ADHD Quality of Life Questionnaire (AAQoL): The self-reported AAQoL is a validated 29-item scale consisting of a total score and 4 subscales (life productivity, psychological health, life outlook, and relationships) designed to assess health-related QOL in adults with ADHD. Each item is rated by patients on a 5-point Likert scale ranging from "Not at all/ Never" (1) to "Extremely/Very Often" (5). The Drug Abuse Screening Test (DAST-10) is a 10-item brief screening tool that can be administered by a clinician or self-administered. Each question requires a yes or no response, This tool assesses drug use, not including alcohol or tobacco use, in the past 12 months. The Alcohol Use Disorders Identification Test (AUDIT) is a 10-item screening tool developed to assess

alcohol consumption, drinking behaviors, and alcohol-related problems.

A score of 8 or more is considered to indicate hazardous or harmful alcohol use. Chi-Square test, t-test /ANOVA - test were used to obtain the results.

### 4. Results

Out of a total of 200 participants, 179(89.5%) were males and 21(10.5%) were females. The majority of patients were in age group 21-30 years (46%) followed by 31-40 years (23.5%). The mean age of the patients was 25.83 ±14.39 years.

It was observed that majority of patients were with primary education (35.5%) followed by secondary education (31.5%) while illiterate were (9.5%). It was observed that majority of patients were semi-skilled (25.5%) followed by farmer (21.5%) while unemployed were 14.5%. majority of patients were married (74.5%) followed by unmarried (20.5%)

According to type of substance abuse, majority of patients were alcohol abuse (56.5%) followed by nicotine (39.5%), cannabis (21.5%) and other drugs were (14%). ADHD among patients was 35.5% (71) by ASRS V1.1. Quality of life in adult ADHD patients showed mean life productivity was 61.92 ±5.67, psychological health was 53.91 ±4.42, relationship was 60.63 ±5.21, life outlook was 59.91 ±8.71 and overall Quality of Life was 60.23 ±7.28. patients screened positive for ADHD had worse life productivity, psychological health, relationships, life outlook and overall Quality of Life than who screened negative with statistical significant difference. (P<0.001)

Adult ADHD patients with DAST -10 score ≥3 were (28.50%) and with AUDIT score ≥20 were (35.50%). Patients screened positive for ADHD had worse AUDIT and DAST-10 score than who screened negative with statistical significant difference. (P<0.001)

#### a) Distribution of patients according to sex:

Sex	No. of Patients	Percentage
Male	179	89.5
Female	21	10.5
Total	200	100

#### b) Distribution of patients according to type of substance abuse:\*

Substance abuse	No. of Patients (n=200)	Percentage
Alcohol	113	56.5
Nicotine	79	39.5
Cannabis	43	21.5
Other drugs	28	14

(\*Multiple Response Present)

#### c) Distribution of patients according to ASRS V1.1 of ADHD:

ADHD	No. of Patients	Percentage
Present	71	35.5
Absent	129	64.5
Total	200	100

**d) Distribution according to quality of life in adult ADHD**

AAQoL	Mean (n=71)	SD
Life Productivity	61.92	5.67
Psychological Health	53.91	4.42
Relationships	60.63	5.21
Life outlook	59.91	8.71
Overall QoL	60.23	7.28

**e) Association of quality of life in patients with and without ADHD**

AAQoL	ADHD		P value
	Screened Positive (Mean ±SD)	Screened Negative (Mean ±SD)	
Life Productivity	81.23 ±7.28	51.1 ±11.19	<0.001*
Psychological Health	75.28 ±6.91	53.2 ±12.89	<0.001*
Relationships	77.63 ±7.57	61.8 ±13.18	<0.001*
Life outlook	72.13 ±9.23	54.47 ±14.28	<0.001*
Overall QoL	81.23 ±7.28	72.68 ±7.11	<0.001*

**f) Association of demographic factors in patients with and without ADHD:**

Demographic factors	ADHD		P value
	Screened Positive	Screened Negative	
Mean age	26.23	27.21	>0.05
Sex	Male	59	<0.05
	Female	12	
Education	illiterate/ Primary	43	>0.05
	Secondary & above	28	
Occupation	Unemployed	12	>0.05
	Employed	59	
Marital status	Married	48	>0.05
	Single/separated	23	

**g) Association of parameters in patients with and without ADHD:**

Parameters	ADHD		P value
	Screened Positive (Mean ±SD)	Screened Negative (Mean ±SD)	
AUDIT score	27.13 ±6.88	13.11 ± 9.21	<0.001*
DAST-10 score	7.63 ± 2.18	5.61 ± 2.83	<0.001*

**5. Discussion**

In the present study mean age of the patients was 25.83 ±14.39 years. In a study done by Suhas Ganesh et al<sup>21</sup> to explore the prevalence of ADHD and its subtypes in treatment seeking patients with SUD observed mean age of 39 years among patients which was slightly more than present study. The distribution of patients according to type of substance abuse showed that majority of patients was alcohol abuse (56.5%) followed by nicotine (39.5%), cannabis (21.5%) and other drugs were 14%.

Similar findings seen in a study done by Suhas Ganesh et al<sup>21</sup> to explore the prevalence of ADHD and its subtypes in treatment seeking patients with SUD observed substance use of alcohol in 57.5% patients, 15% had cannabis, 9.6% had opioid, and 15% had polysubstance dependence syndrome.

In the present study, ADHD among patients with Substance Use Disorder was 35.5%. Similarly, Dalia Mokhtar Khalil et al<sup>23</sup> studied prevalence of Adult ADHD in Substance Use Disorder patients also observed prevalence of Adult ADHD

among the substance use disorder patients was found to be 27.8%. 35.5%. In a study done by Sitholey P et al<sup>24</sup> in a general psychiatric outpatient setting assessing 283, adult patients 25 (8.83%) were noted to have ADHD. A study recruiting 237 college students in Chandigarh by Jhambh I et al.<sup>22</sup> reported an even lower rate of with 13 (5.48%) qualifying for the diagnosis of adult ADHD.

In the study, it was observed that patients screened positive for ADHD were younger than who screened negative with no statistical significant difference. (P>0.05) ADHD was found more in male patients compared to females with statistical significant difference. (P<0.05) Education, occupation and marital status showed no statistical significant difference among patients with and without ADHD. (P>0.05)

In a study by Dalia Mokhtar Khalil et al<sup>23</sup> groups with and without ADHD did not differ significantly in terms of socio-demographic profile. The SUD with Adult ADHD had significantly mean early age of onset 20 years Vs 32 years in the other group.

In the present study, it was observed that patients screened positive for ADHD had worse life productivity, psychological health, relationships, life outlook and overall Quality of Life than who screened negative with statistical significant difference. (P<0.001) In a study by Chao et al<sup>107</sup> who examined the relationship between ADHD, depression/anxiety, and quality of life showed patients had more severe depression, anxiety, and daytime sleepiness and had poorer QOL than controls (all p<0.05) and ADHD should be included in the differential diagnosis for decreased Quality of Life.

It was observed that patients screened positive for ADHD had worse AUDIT score and DAST-10 score than who screened negative with statistical significant difference. (P<0.001)

Overall, the co-occurrence of ADHD and SUD can result in a more severe course of both substance use and psychiatric symptoms and outcomes. It is therefore important to screen for ADHD in patients presenting with SUD and vice-versa.<sup>108,109</sup>

**6. Future Scope**

The prevalence of Adult Attention Deficit Hyperactivity Disorder with Substance Use Disorders was more in younger age group with male predominance. The quality of life among Adult Attention Deficit Hyperactivity Disorder patients who screened positive was worse compared to other patients, the co-occurrence of Adult Attention Deficit Hyperactivity Disorder and Substance Use Disorders can result in a more severe course of both substance use and psychiatric symptoms and outcomes. It is therefore important to screen for ADHD in patients presenting with SUD and vice-versa. Adult ADHD is a highly co-morbid condition among patients with SUDs. Regular screening with scales such as ASRS symptom checklist enables detection of this condition. If this co-morbid condition is identified, then it should be treated appropriately.

## References

- [1] Polanczyk, G., Silva de Lima, M., Horta, B. L., Biederman, J., & Rohde, L. A. The worldwide prevalence of ADHD: A systematic review and meta-regression analysis. *American Journal of Psychiatry*, 2007; 164(6), 942–948
- [2] Kessler, R. C., Adler, L., Barkley, R., Biederman, J., Conners, C. K., Demler, O., et al. The prevalence and correlates of adult ADHD: Results from the National Co-morbidity Survey Replication. *American Journal of Psychiatry*. 2005; 163(4), 716–723.
- [3] Barkley, R. A. Primary symptoms, diagnostic criteria, prevalence, and gender differences. In R. A. Barkley (Ed.), *Attention-deficit/hyperactivity disorder: A handbook for diagnosis and treatment* (3rd ed., pp. 76–121). New York: Guilford Press. 2006.
- [4] Weiss, R. D., Arias, A. J., Gelernter, et al. Correlates of co-occurring ADHD in drug-dependent subjects: Prevalence and features of substance dependence and psychiatric disorders. *Addictive Behaviors*, 2008; 33:1199–1207.
- [5] Biederman J, Monuteaux MC, Mick E, Spencer T, Wilens TE, Silva JM, et al. Young adult outcome of attention deficit hyperactivity disorder: a controlled 10-year follow-up study. *Psychol Med*. 1995;36(2):167–179.
- [6] Van de Glind G, Konstenius M, Koeter MWJ, et al. Variability in the prevalence of adult ADHD in treatment seeking substance use disorder patients: results from an international multi-center study exploring DSM-IV and DSM-5 criteria. *Drug Alcohol Depend*. 2014;134:158–166.
- [7] Spencer, T. J., Biederman, J., & Mick, E. Attention-deficit/hyperactivity disorder: Diagnosis, lifespan, comorbidities, and neurobiology. *Ambulatory Pediatrics*, 2007; 7(1), 73-81.
- [8] DuPaul GJ, McGoey KE, Eckert TL, et al. Preschool children with attention-deficit/hyperactivity disorder: impairments in behavioral, social, and school functioning. *Journal of the American Academy of Child and Adolescent Psychiatry*. 2001;40(5):508-15.
- [9] Glass K, Flory K, Hankin BL. Symptoms of ADHD and close friendships in adolescence. *Journal of attention disorders*. 2012;16(5):406-17.
- [10] Larsson H, Asherson P, Chang Z, Ljung T, Friedrichs B, Larsson JO, et al. Genetic and environmental influences on adult attention deficit hyperactivity disorder symptoms: a large Swedish population-based study of twins. *Psychological medicine*. 2013;43(1):197-207.
- [11] Faraone SV, Perlis RH, Doyle AE, Smoller JW, Goralnick JJ, Holmgren MA, et al. Molecular genetics of attention-deficit/hyperactivity disorder. *Biological psychiatry*. 2005;57(11):1313-23.
- [12] Banerjee TD, Middleton F, Faraone SV. Environmental risk factors for attention-deficit hyperactivity disorder. *Acta paediatrica*. 2007;96(9):1269-74.
- [13] Langley K, Rice F, van den Bree MB, Thapar A. Maternal smoking during pregnancy as an environmental risk factor for attention deficit hyperactivity disorder behaviour. A review. *Minerva pediatrica*. 2005;57(6):359-71.
- [14] Linnet KM, Dalsgaard S, Obel C, Wisborg K, Henriksen TB, Rodriguez A, et al. Maternal lifestyle factors in pregnancy risk of attention deficit hyperactivity disorder and associated behaviors: review of the current evidence. *The American journal of psychiatry*. 2003;160(6):1028-40.
- [15] Crocq MA. Historical and cultural aspects of man's relationship with addictive drugs. *Dialogues in clinical neuroscience*. 2007;9(4):355-61.
- [16] Degenhardt L, Whiteford HA, Ferrari AJ, Baxter AJ, Charlson FJ, Hall WD, et al. Global burden of disease attributable to illicit drug use and dependence: findings from the Global Burden of Disease Study 2010. *Lancet*. 2013;382(9904):1564-74.
- [17] Kessler RC, Adler L, Barkley R, Biederman J, Conners CK, Demler O, et al. The prevalence and correlates of adult ADHD in the United States: results from the National Co-morbidity Survey Replication. *The American journal of psychiatry*. 2006;163(4):716-23.
- [18] Simon V, Czobor P, Balint S, Meszaros A, Bitter I. Prevalence and correlates of adult attention-deficit hyperactivity disorder: meta-analysis. *The British journal of psychiatry: the journal of mental science*. 2009;194(3):204-11.
- [19] Volkow ND, Wang GJ, Kollins SH, Wigal TL, Newcorn JH, Telang F, et al. Evaluating dopamine reward pathway in ADHD: clinical implications. *Jama*. 2009;302(10):1084-91
- [20] Wilson JJ, Spencer TJ. Understanding attention-deficit/hyperactivity disorder from childhood to adulthood. *Postgrad Med*. 2010;122(5):97–109.
- [21] Ganesh S, Kandasamy A, Sahayaraj US, Benegal V. Adult Attention Deficit Hyperactivity Disorder in Patients with Substance Use Disorders: A Study from Southern India. *Indian J Psychol Med*. 2017 Jan-Feb;39(1):59-62.
- [22] Jhambh I, Arun P, Garg J. Cross-sectional study of self-reported ADHD symptoms and psychological comorbidity among college students in Chandigarh, India. *Ind Psychiatry J*. 2014;23(2):111–116.
- [23] Khalil DM, Sherra KS, Abuhegazy HM, et al. A study of prevalence and other characteristics of adult ADHD in substance use disorder patients: a cross sectional study. *J. Evolution Med. Dent. Sci*. 016;5(46):01-04.
- [24] Sitholey P, Agarwal V, Sharma S. An exploratory clinical study of adult attention deficit/hyperactivity disorder from India. *Indian J Med Res*. 2009 Jan;129(1):83-8.

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