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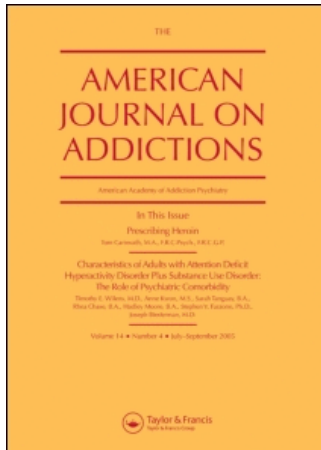
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# Influence of Attention-Deficit/Hyperactivity Disorder Symptoms on Methadone Treatment Outcome

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*A review of 687 consecutive admissions to a Midwestern methadone maintenance program was undertaken to establish the prevalence of ADHD symptoms and their association with treatment outcome. Of the 687 admissions, 396 (58%) patients self-reported experiencing one or more ADHD symptoms during the two weeks prior to admission, and 131 (19%) patients reported ADHD symptoms that significantly interfered with functioning in daily activities. At nine months post-admission, the patients who reported significant symptoms of ADHD were able to reduce their drug use but were less likely to have achieved abstinence than those who did not report significant symptoms ( $p \leq 0.001$ ). The authors discuss the importance of screening for ADHD symptoms in methadone treatment programs and propose interventions believed helpful in improving management of ADHD symptoms and improving outcome. (Am J Addict 2007;16:46–48)*

## INTRODUCTION

Attention-deficit/hyperactivity disorder (ADHD) is increasingly being identified in adults. Longitudinal studies of children with ADHD demonstrate that 50–65% continue to manifest symptoms as adults.<sup>1–3</sup> Though no epidemiologic studies have been conducted to assess the prevalence of ADHD in adults, crude estimates based on childhood and adolescent prevalence rates and longitudinal studies suggest that between 0.3% and 2% of the adult population could be diagnosed with ADHD.<sup>4,5</sup> However, these figures differ in adults with co-morbid substance use disorders. Shekim et al.<sup>6</sup> reported that 30% of 56 adult outpatients with ADHD had a drug use disorder and 34% had alcoholism. The prevalence has been reported to be 35%<sup>7</sup> and 15%<sup>8</sup> in primary cocaine abusers and 24% in a mixed group of psychoactive substance users.<sup>9</sup> Schuckit

et al.<sup>10</sup> reported that 17% of drug abusers in two residential treatment programs had childhood hyperactivity. Although patients reported the use of many drugs, opiates were commonly the drug of choice in those with a history of hyperactivity versus those without such a history (71% vs. 49%).

There have been only limited studies of individuals with ADHD who are seeking treatment for opioid abuse and even fewer studies looking at treatment outcome. Eyre et al.<sup>11</sup> reported on a sample of 157 opioid abusers presenting for methadone treatment. Approximately 22% met one or more criterion for childhood hyperactivity. Unfortunately, the study did not assess the prevalence of adult hyperactive symptoms or the correlation of childhood symptoms and treatment outcome. King et al.<sup>12</sup> did study the relationship of ADHD to psychiatric and substance abuse comorbidity and treatment outcome. They found that 19% of the opioid abusers they enrolled in their study had symptoms of ADHD. At the one-year follow-up, they found no difference in treatment outcome between the groups with and without ADHD. Davids et al.<sup>13</sup> performed an extended clinical semi-structured interview on opioid-dependent patients and found that ADHD alone does not predispose the development of opioid dependence. However, patients with ADHD and opioid dependence were found to have more complications related to poor school performance and difficulties in social adaptation.

Based on the sparse literature of ADHD's influence on opioid treatment, a retrospective review of methadone treatment records was undertaken to establish the rate of current ADHD symptoms and its influence on treatment outcome.

## METHOD

This study was approved by the Hennepin County Medical Center Human Subjects Research Committee. The medical records of 687 consecutive admissions

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HENNEPIN FACULTY ASSOCIATES
Department of Medicine  
Addiction Medicine Program
Self Rating Form  
A.A.D.

Name: \_\_\_\_\_  
Date of Birth: \_\_\_\_/\_\_\_\_/\_\_\_\_

Please rate the following symptoms as they applied to you during the past two weeks:

	Absent	Mild	Moderate	Severe
1. Trouble sitting still	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Impatient (example: waiting in line)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Activity feels like "driven by a motor"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Fidgety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. Trouble doing work which requires attention to detail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Difficulty concentrating or paying attention	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Easily frustrated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Trouble getting work done	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Can't keep attention on reading	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Irritable or hot-tempered	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Easily distracted	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Easily upset in crowds or at large parties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. Act impulsively without thinking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Bothered by noise when trying to concentrate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. Easily overstimulated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Sudden changes in mood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Difficulty thinking clearly when not in quiet room	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. Trouble getting along with spouse/significant other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Trouble getting along with friends	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. Trouble getting along with people in general	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

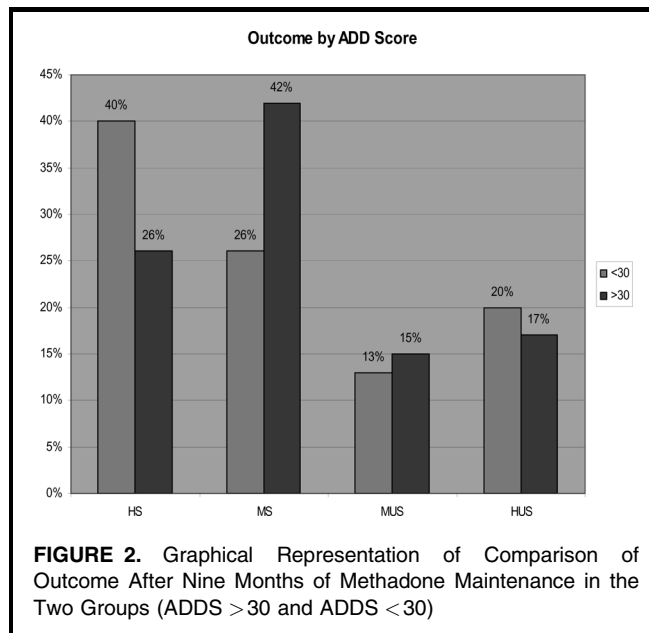
**FIGURE 1.** ADDS (Attention Deficit Disorder Screen)

between 1994 and 2000 to an urban, Midwestern, hospital-based methadone maintenance treatment program were retrospectively reviewed. The admission process included the completion of the Attention Deficit Disorder Screen (ADDS; see Figure 1). The ADDS is a 21-item self-report questionnaire developed at the University of Minnesota that captures patient rating of ADHD symptom severity during the previous two weeks. A score of 30 was determined by a consensus of clinicians who were asked to establish a cutoff score at or above which patients would have significant difficulty with daily functioning. Patient records were reviewed for gender, race, and treatment outcome at nine months post-admission. Patients who presented for an intake evaluation in narcotic withdrawal were not evaluated.

Outcome categories were based on a modification of criteria originally used by the Drug Abuse Research Project (DARP),<sup>14</sup> which assigned patients to one of four

**TABLE 1.** Outcome categories

Outcome category	% Drug screen positive
Highly successful (HS)	No positive drug screens
Moderately successful (MS)	>0% <25% positive
Moderately unsuccessful (MUS)	>25% <50% positive
Highly unsuccessful (HUS)	>50% positive



**FIGURE 2.** Graphical Representation of Comparison of Outcome After Nine Months of Methadone Maintenance in the Two Groups (ADDS >30 and ADDS <30)

outcome categories based on the previous three months' drug screens (see Table 1).

Patients with ADDS scores <30 were compared to patients with scores >30 at the end of nine months based on the DARP outcome categories. Urine drug screens were collected on a random, weekly basis and tested for opiates, amphetamine, barbiturates, benzodiazepines, and cocaine.

## RESULTS

Of the 687 patients, 396 (58%) self-reported one or more ADHD symptom during the previous two weeks; 131 (19%) patients scored greater than 30 on the ADDS, reporting symptoms of ADHD that interfered with daily functioning. Patients with ADDS scores >30, compared to patients who scored <30, were statistically less likely ( $p < .0001$ ) to be highly successful at maintaining abstinence at nine months post-admission (see Figure 2 and Table 2). There was no statistically significant difference between any of the groups on age, gender, or race (see Table 3).

**TABLE 2.** Comparison of outcome at nine months

	ADDS score >30	ADDS score <30	
Highly successful	34 (26%)	222 (40%)	$p \leq .0001$
Moderately successful	55 (42%)	145 (26%)	
Moderately unsuccessful	19 (15%)	72 (13%)	
Highly unsuccessful	22 (17%)	111 (20%)	

**TABLE 3.** Comparison of demographics

	ADD score		Significance
	>30 (N = 131)	<30 (N = 556)	
Age (mean, SD)	37, SD 11.8	38, SD 10.7	NS ( $p = 0.5721$ )
<i>Race (n, %)</i>			
Caucasian	45 (34%)	366 (66%)	$p < 0.770$
African American	86 (66%)	190 (34%)	NS
<i>Gender</i>			
Male	50 (38.6%)	311 (56%)	NS
Female	81 (62%)	245 (44%)	

## DISCUSSION

The results from this study show an association between the presence of ADHD symptoms and a less-than-optimal outcome in methadone treatment. This is of importance, as ADHD is not routinely screened for in opioid-dependent patients seeking treatment. It is likely that identifying and treating these symptoms would improve the patient's daily functioning and treatment outcome.

Establishing a retrospective diagnosis of ADHD in adults can be challenging and complicated, especially in patients with substance abuse and other psychiatric illness. This study screened for the symptoms of ADHD rather than diagnose the condition, using a cutoff score that identified patients who were likely to experience significant difficulty functioning in daily activities due to their symptoms.

The finding of 19% prevalence of ADHD symptoms is consistent with prevalence reported in previous research of opioid abusers. Eyre et al.<sup>11</sup> found a rate of 22% of childhood hyperactivity in their study of methadone-treated patients, and King et al.<sup>12</sup> confirmed a diagnosis of ADHD in 19% of their overall sample of 125 opioid abusers entering methadone treatment.

The present study showed a significant difference in outcome between the opioid users with and without symptoms of ADHD. The study by King et al.<sup>12</sup> reported that this difference disappeared with more intense counseling during methadone treatment. It would be important to screen and identify these patients in order to assist and possibly teach them simple organizational skills that may help improve their outcome.

## CONCLUSION

In this large sample of consecutive admissions to methadone treatment, there are relatively high rates

(58%) of patients who report ADHD symptoms. Patients who reported significant symptoms (131/687) as compared to other patients were able to reduce their drug use but were less likely to be abstinent at nine months post-admission. The authors suggest that all patients entering methadone maintenance treatment (MMT) be screened for the presence of ADHD and efforts be made to address the more incapacitating symptoms. Once patients are identified, simple techniques and strategies such as use of memory aids, daily planners, time and activity reminders, journaling, time-motion studies, and coping catalogues, can be very helpful in reducing the impact of ADHD symptoms on treatment and are well within the resources of most programs.

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