Adult Attention Deficit Disorder
Center of Maryland

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PHYSICIAN'S REFERENCE: COMORBIDITY OF ADULT ADHD
By David W. Goodman, MD

Based on the National Comorbidity Survey Replication (NCS-R), 18.6% (SE=4.2%) of study participants with ADHD also had MDD, compared with 7.8% (SE=0.4%) who had MDD but did not have ADHD (OR=2.7; 95% CI, 1.5-4.9) (Table 2). All comorbid conditions were significantly greater in the ADHD populations but did not vary greatly across disorder class (OR=2.7-7.5 for mood disorders, 1.5-5.5 for anxiety disorders, 1.5-7.9 for substance use disorders, and 3.7 for intermittent explosive disorder). These results are based on 3,199 study participants aged18 to 44 who met the criteria for at least one disorder assessed in part one of the NCS or who were included in part two as part of a probability subsample of other respondents (Kessler, 2006). A recent study reported even higher rates of comorbid depression and ADHD. with up to 24.4% in adults with ADHD (Fischer, 2006).

While MDD is one of the most common lifetime ADHD comorbidities, other disorders commonly associated with ADHD in adults include conduct disorder; ODD; antisocial personality disorder; anxiety disorders; and alcohol, nicotine, and other substance abuse or dependence (Table 3) (Fischer, 2006). The comorbidity of ADHD with other disorders also has a greater impact on the individual and society, as well as on the therapeutic approach. In addition, data from the aforementioned Brazilian study indicate that a higher frequency of generalized anxiety disorder and social phobia was reported in adults with comorbid ADHD and MDD. In fact, in a study by McGough and colleagues, 87% of adults with ADHD had at least one and 56% had at least two other psychiatric disorders, compared with 64% and 27%, respectively, in non-ADHD study participants. Patterns of psychiatric comorbidity were assessed in adults with and without ADHD identified through a genetic study of families with multiple children with ADHD. Rates and mean ages at onset of comorbid psychopathology were compared in 435 parents with lifetime ADHD, parents with persistent ADHD, and those without ADHD (McGough, 2005).

A diagnosis of ADHD in adults may be obscured by the presence of MDD and therefore go untreated, even though treatment may sought for other comorbid disorders (Fischer, 2006; Kessler, 2006). Major depressive disorder is one of the most commonly occurring mental disorders and is one of the most frequent comorbidities associated with ADHD. The clinical manifestations of these disorders can be altered when the conditions coexist.

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The diagnostic differentiation between ADHD and MDD was examined in 239 individuals with ADHD without MDD and in 81 ADHD subjects with MDD. Compared to subjects without MDD, the patients with MDD presented more often with social phobia and generalized anxiety disorder; only 11.7% of ADHD patients without MDD presented with social phobia, compared with 33.3% of ADHD subjects with MDD (OR=3.6; 95% CI, 1.9-6.6; P<0.01). Furthermore, 13.4% of ADHD patients without MDD presented with general anxiety disorder compared with 30.9% of ADHD subjects with MDD (OR=2.6; 95% CI,1.4-4.7; P<0.01). No difference was observed between the two groups in other clinical diagnoses such as OCD, nicotine use, alcohol dependence or abuse, ODD, or conduct disorder (Fischer, 2006). In addition, there was no difference in age at ADHD diagnosis between ADHD groups with or without MDD, even considering that subjects with MDD had undergone more frequent prior psychotherapy and/or pharmacological treatment. This indicates that the mental health professionals missed an opportunity for early ADHD diagnosis while the patients were being evaluated for another psychiatric condition. This situation is likely due to other conditions obscuring the presentation of ADHD (Fischer, 2006).

A review of the Wender Utah Rating Scale (WURS) suggests that the test can distinguish between individuals with ADHD and unipolar depression, even though some symptoms in depression are similar to symptoms of ADHD—decreased concentration, forgetfulness, restlessness, irritability, affective liability, and poor stress tolerance (Murphy, 2004). For 23 of the 25 items analyzed in the WURS, the mean difference in scores between the ADHD group (n=81) and the group with depression (n=70) was statistically significant using a one-tailed test (P<0.01).

An earlier study from the University of California actually reported that most of its 56 adult ADHD study subjects (age 19 to 65 years) had additional DSM-III-R diagnoses and only seven (12.5%) had a diagnosis of ADHD alone. After multiple diagnostic tests—including the Schedule for Affective Disorders and Schizophrenia-Lifetime Version, the Symptoms Checklist Revised, the Conners' Attention Deficit Disorder with Hyperactivity scale, and the Global Assessment of Functioning scale—53% of study participants met the criteria for generalized anxiety disorder. In addition, 34% had alcohol abuse or dependence, 30% drug abuse, 25% dysthymic disorder, and 25% cyclothymic disorder (Shekim, 1990).

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Table 3. Lifetime Psychiatric Diagnosis in ADHD Adults With or Without MDD

Table 3
Lifetime psychiatric diagnoses in ADHD adults with or without MDD

	ADHD (MDD−)	ADHD (MDD+)	Total	MDD effect		
	$n = 239$ (74.69%)	$n = 81$ (25.31%)	$n = 320$	OR (95%CI)	Statistical analysis	
	N (%)	*n* (%)	*n* (%)		*w*	*p*
Panic disorder	14 (5.9)	11 (13.6)	25 (7.8)	2.2 (0.9–5.2)	3.36	0.07
Agoraphobia	5 (2.1)	2 (2.5)	7 (2.2)	0.9 (0.2–4.8)	0.01	0.91
OCD	15 (6.3)	4 (4.9)	19 (5.9)	0.8 (0.2–2.4)	0.21	0.65
Social phobia	28 (11.7)	27 (33.3)	55 (17.2)	3.6 (1.9–6.6)	16.58	<0.01
Specific phobia	20 (8.4)	8 (9.9)	28 (8.8)	1.0 (0.4–2.5)	<0.01	0.96
GAD	32 (13.4)	25 (30.9)	57 (17.8)	2.6 (1.4–4.7)	9.18	<0.01
Nicotine use	108 (45.2)	32 (39.5)	140 (43.8)	0.8 (0.5–1.4)	0.50	0.48
Alcohol dependence	27 (11.3)	7 (8.6)	34 (10.6)	0.9 (0.4–2.2)	0.04	0.84
Alcohol abuse	27 (11.3)	9 (11.1)	36 (11.3)	1.3 (0.6–3.0)	0.39	0.53
Substance dependence	29 (12.1)	0 (0.0)	29 (9.1)		10.81[a]	<0.01
Substance abuse	11 (4.6)	2 (2.5)	13 (4.1)	1.0 (0.1–9.8)	0.37	0.54
ODD	100 (41.8)	34 (42.0)	134 (41.9)	0.9 (0.6–1.6)	0.05	0.82
Conduct disorder	55 (23.0)	16 (19.8)	71 (22.2)	0.9 (0.5–1.8)	0.05	0.83
Antisocial personality disorder	25 (10.5)	3 (3.7)	28 (8.8)	0.4 (0.1–1.3)	2.35	0.12

Values in table represent frequency (%).
For binary outcomes we reported *w* (Wald χ^2 scores) and *p* values provided by logistic regression analyses.
ADHD, attention-deficit/hyperactivity disorder; MDD−, without major depressive disorder; MDD+, with major depressive disorder; OCD, obsessive-compulsive disorder; GAD, generalized anxiety disorder; ODD, oppositional defiant disorder; OR, Odds ratio; CI, confidence interval.
[a] A pearson chi-square was reported since data did not fulfill requirements for logistic regression analysis. All diagnoses were based on DSM-IV criteria.

From Fischer, J Psychiatr Res, 2006

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TABLE 3. Comorbidity of Adult ADHD With Other DSM-IV Disorders in the National Comorbidity Survey Replication (N=3,199)[a]

	Prevalence of ADHD[b]				Prevalence of Other Disorders[c]					
	Among Respondents With Other Disorders		Among Respondents Without Other Disorders		Among Respondents With ADHD		Among Respondents Without ADHD		Analysis[d]	
Comorbid Disorder During Previous 12 Months	%	SE	%	SE	%	SE	%	SE	Odds Ratio	95% CI
Mood disorders										
Major depressive disorder	9.4	2.3	3.7	0.5	18.6	4.2	7.8	0.4	2.7*	1.5–4.9
Dysthymia	22.6	5.8	3.7	0.5	12.8	3.4	1.9	0.2	7.5*	3.8–15.0
Bipolar disorder	21.2	3.9	3.5	0.5	19.4	3.8	3.1	0.3	7.4*	4.6–12.0
Any mood disorder	13.1	2.3	2.9	0.5	38.3	5.5	11.1	0.6	5.0*	3.0–8.2
Anxiety disorders										
Generalized anxiety disorder	11.9	3.9	4.0	0.5	8.0	2.5	2.6	0.3	3.2*	1.5–6.9
PTSD	13.4	3.4	3.8	0.5	11.9	3.0	3.3	0.4	3.9*	2.1–7.3
Panic disorder	11.1	3.0	3.9	0.5	8.9	2.5	3.1	0.3	3.0*	1.6–5.9
Agoraphobia	19.1	9.0	4.0	0.5	4.0	2.0	0.7	0.1	5.5*	1.6–18.5
Specific phobia	9.4	1.9	3.6	0.5	22.7	4.2	9.5	0.6	2.8*	1.7–4.6
Social phobia	14.0	2.5	3.2	0.5	29.3	4.3	7.8	0.5	4.9*	3.1–7.6
Obsessive-compulsive disorder	6.5	5.2	4.2	0.5	2.7	2.0	1.3	0.4	1.5	0.2–9.4
Any anxiety disorder	9.5	1.4	2.8	0.5	47.1	5.0	19.5	0.7	3.7*	2.4–5.5
Substance use disorders										
Alcohol abuse	9.5	4.2	4.0	0.5	5.9	2.5	2.4	0.2	2.5	0.9–6.6
Alcohol dependence	11.1	5.9	4.0	0.5	5.8	2.9	2.0	0.4	2.8	0.8–9.8
Drug abuse	7.2	6.6	4.1	0.5	2.4	2.3	1.4	0.2	1.5	0.2–10.5
Drug dependence	25.4	11.7	4.0	0.5	4.4	2.3	0.6	0.1	7.9*	2.3–27.3
Any substance use disorder	10.8	3.6	3.8	0.5	15.2	4.8	5.6	0.6	3.0*	1.4–6.5
Impulse control disorders: intermittent explosive disorder	12.3	2.5	3.6	0.5	19.6	3.8	6.1	0.5	3.7*	2.2–6.2

[a] Among respondents ages 18–44 years who met the criteria for at least one disorder assessed in part 1 of the survey or were included in part 2 as part of a probability subsample of other respondents.
[b] These numbers can be interpreted as, for example, 9.4% of individuals with major depressive disorder have ADHD and 3.7% of those without major depressive disorder have ADHD.
[c] These numbers can be interpreted as, for example, 18.6% of individuals with ADHD have major depressive disorder and 7.8% of those without ADHD have major depressive disorder.
[d] Based on multivariate logistic regression analysis controlling for age by using two-sided design-based multiple-imputation tests.
*p<0.05

From Kessler, Am J Psychiatry, 2006.

Link to Goodman D, McIntyre R, Bukstein O. Differential Diagnosis of Adult Attention-Deficit/Hyperactivity Disorder: Treatment Options and Comorbidity Considerations. CNS Spectrums. July 2009 (suppl);14(7):1-16.

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