Assessing Attention-Deficit/Hyperactivity Disorder in Adults: Focus on Rating Scales

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The diagnosis of attention-deficit/hyperactivity disorder (ADHD) in adults can be a challenging process because it includes making judgments based on clinical interviews, rating scale results, informant ratings, and objective supporting evidence. The patient evaluation should gather information on the severity and frequency of symptoms, the establishment of childhood onset of symptoms, the chronicity and pervasiveness of symptoms, and the impact of symptoms on major life activities. Some of the rating scales being used in the adult population are the Conners' Adult ADHD Rating Scales, the Brown Attention-Deficit Disorder Scale for Adults, the Wender Utah Rating Scale, the ADHD Rating Scale and ADHD Rating Scale-IV, the Current Symptoms Scale, and the recently-developed Adult ADHD Self-Report Scale-v1.1 Symptom Checklist. More research is needed to establish the usefulness of self-administered rating scales compared with investigator-administered scales in the assessment and diagnosis of adult ADHD. *(J Clin Psychiatry 2004;65[suppl 3]:12–17)*

The diagnosis of attention-deficit/hyperactivity disorder (ADHD) in adults can be challenging because, until the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV)[1] was published, the criteria were worded such that the disorder seemed to apply to only children. Many physicians are still unaware that this disorder frequently persists into adulthood. The criteria of the DSM-IV have been used to establish rating scales that help in the diagnosis of this disorder. However, the symptom assessment scales cannot be used as standalone agents for diagnosis. Physicians also need to ask key questions about the patient's past and current impairment, take medical, educational, social, psychological, and vocational histories, and rule out other conditions before concluding that ADHD is the appropriate diagnosis. Informant ratings and other objective evidence that establish the onset, chronicity, and pervasiveness of the disorder are also helpful in making a valid diagnosis.

The DSM-IV defines 5 subtypes of ADHD. These include (1) predominantly hyperactive/impulsive type, in which the patient displays 6 or more hyperactive/impulsive symptoms but fewer than 6 inattentive symptoms; (2) predominantly inattentive type, in which the patient displays 6 or more inattentive symptoms but fewer than 6 hyperactive/impulsive symptoms; (3) ADHD combined type, in which the patient displays 6 or more symptoms of hyperactive/impulsive symptoms and 6 or more symptoms of inattention; (4) ADHD in partial remission, in which the patient met criteria as a child but does not currently meet full criteria, although he or she displays some impairing symptoms; and (5) ADHD not otherwise specified, in which the patient's symptoms do not currently meet full criteria for the disorder and in which it is unclear whether criteria for the disorder have previously been met.

The identification of ADHD in adults is inherently complex for several reasons.[2] First, the core symptoms of ADHD are present in everyone to some degree.[3] Second, many adults diagnosed with ADHD also have comorbid psychiatric disorders that can cloud or complicate the diagnostic picture. Therefore, clinicians need to determine if the symptoms are best explained by ADHD, a comorbid disorder, or both. Third, the symptoms must result in clinically significant impairment in at least 2 areas of life, and the definition of this term is relative and to some degree a matter of clinical judgment. Fourth, the diagnosis of ADHD in adults relies on establishing a childhood onset of symptoms, but early records and self-reported recollections of symptoms might not be available, clear, or complete. Fifth, there is no litmus test (i.e., no neuropsychological test or test battery, brain scan, or blood test) that can reliably diagnose this condition. Lastly, extensive media coverage and increased public awareness of ADHD in adults has led to misconceptions, mythology, and confusion about the disorder.

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Table 1. Key Questions in Identifying ADHD

Are the core symptoms—inattention, hyperactivity, and impulsivity—clearly present?
Does objective evidence show that symptoms cause significant impairment in school, work, or social domains and in daily adaptive functioning?
Have symptoms been observed as part of the person's behavior across situations since childhood? If not, is there a plausible reason why symptoms were not noticed until later or seemed to come and go?
What evidence is there that symptoms are not due to lack of effort, poor vocational match, or transient situational or environmental circumstances?
Are symptoms better explained by another psychiatric or medical diagnosis?
Might other psychiatric diagnoses coexist with ADHD symptoms?

KEY QUESTIONS IN IDENTIFYING ADHD

Since diagnosing ADHD can be challenging, physicians should address several key questions to validate the diagnosis and to help establish the onset, chronicity, and pervasiveness of the disorder (Table 1).[3] Diagnosing ADHD in adults is not simply a matter of symptom endorsement or identifying certain personality characteristics such as being talkative or energetic; rather, it is a more comprehensive process that involves the evaluation of symptom severity and frequency, childhood onset of symptoms, chronicity and pervasiveness of symptoms, and degree of impairment in major life activities. In addition to the patient's self-report, informant reports, and objective evidence, the use of ADHD rating scales is helpful in establishing the diagnosis.

ADHD RATING SCALES

Rating scales are cost-effective and valuable because clinicians can obtain a large amount of data quickly, including presence and severity of symptoms. In addition to aiding in diagnosis, rating scales are also useful for measuring response to treatment. Limitations of rating scales are that they require familiarity with the person's behavior to be reliable; adult psychopathology can distort perceptions on rating scales; and some self-report scales may have questionable reliability. Table 2 describes some symptom rating scales available for ADHD. Although not a complete detailing of the available scales, the assessments described include many of the commonly currently employed scales. They focus on assessments of current adult ADHD symptoms and retrospective reporting of childhood ADHD symptoms.

Conners' Adult ADHD Rating Scales

The Conners' Adult ADHD Rating Scales (CAARS)[4] have symptom checklists with ratings of "not at all," "just a little," "pretty much," and "very much." One scale is designed for patient self-report. Another scale is available for completion by an observer such as a spouse, friend, or parent so that clinicians can gather corroborating data and compare it with the patient's self report. Both the self-report and observer versions of the CAARS are available in 3 lengths—screening, short, and long—which can be selected on the basis of how much time patients and clinicians have. The 18 DSM-IV ADHD items can be extracted from the CAARS, which recently were used as the primary outcome measure in the largest medication trials[14] in adult ADHD to date.

Brown Attention-Deficit Disorder Rating Scale for Adults

The development of the Brown Attention-Deficit Disorder (ADD) Rating Scale for Adults[5] began before the criteria for ADHD were published in the DSM-IV. This scale is based on a series of symptom descriptors reported by high school and college students with nonhyperactive ADD and is often used with highly functioning adults. The Brown ADD Rating Scale for Adults assesses 5 dimensions of symptoms, which include organizing work, sustaining attention and concentration, sustaining alertness and effort, managing frustration and other emotions, and using working memory. To test the validity of this scale, normative data were collected from 142 patients (71 diagnosed with ADD and 71 diagnosed with ADHD) and 143 comparison subjects.[15] The internal consistency was high (Cronbach's coefficient $\alpha = .96$). Using a cutoff score of 50 for possible adult ADD (i.e., a score above 50 suggests a diagnosis of ADD), there was a 4% false negative rate and a 6% false positive rate in adult ADD.[15]

Wender Utah Rating Scale

The Wender Utah Rating Scale (WURS)[8] is an assessment tool used to diagnose childhood ADHD retrospectively. This scale has 61 items, for which adults rate symptoms of childhood ADHD as "not at all or very slightly," "mildly," "moderately," "quite a bit," or "very much." The WURS is based on items from the monograph *Minimal Brain Dysfunction in Children*,[9] which are more detailed than the 18 items in the DSM-IV criteria. The WURS was validated in a study by Ward et al.[8] of 81 adult patients with ADHD, 100 "normal" adult subjects, and 70 adult patients diagnosed with unipolar depression. When possible, the mother of each of the subjects in the ADHD and normal comparison groups completed the Wender Utah Parents' Rating Scale, which is a modified version of the Conners' Parent Rating Scale.[16] The 81 ADHD patients (45 men and 36 women) completed the WURS before entering medication trials for ADHD. A sample of 250 psychologically healthy, or normal, adults was identified through their children. Teachers from a nearby school district selected children in their elementary school classrooms who were "well-adjusted." Of the 250 adults in the sample, 100 (50 men and 50 women) were randomly chosen as comparison subjects. The second comparison group

Table 2. ADHD Rating Scales Used for Adults

Name	Informant	Rating Criteria	Scale
Conners' Adult ADHD Rating Scales[4]	Self and/or observer such as spouse, parent, or friend	DSM-IV[1]	0–4 (not at all, just a little, pretty much, very much)
Brown ADD Rating Scale for Adults[5]	Self	Series of symptom descriptors reported by high school and college students with nonhyperactive ADD[a]	0–3 (never, once a week or less, twice a week, almost daily)
Wender Utah Rating Scale[8]	Self	Items from the monograph *Minimal Brain Dysfunction in Children*[9]	0–4 (not at all or very slightly, moderately, quite a bit, very much)
ADHD Rating Scale[10]	Parent or teacher for children, generally self for adults	DSM-III-R[7]	0–3 (not at all, just a little, pretty much, very much)
ADHD Rating Scale-IV[11]	Parent or teacher for children, generally self for adults	DSM-IV[1]	0–3 (never or rarely, sometimes, often, very often)
Current Symptoms Scale[12]	Self	DSM-IV[1]	0–3 (never or rarely, sometimes, often, very often)
Adult ADHD Self-Report Scale-v1.1[13] Symptom Checklist	Self	DSM-IV-TR[17]	0–4 (never, rarely, sometimes, often, very often)

[a]Many symptoms were similar to those published in the third[6] and revised third[7] editions of the DSM.
Abbreviations: ADD = attention-deficit disorder, ADHD = attention-deficit/hyperactivity disorder, DSM = *Diagnostic and Statistical Manual of Mental Disorders*, R = revised, TR = text revision.

comprised 70 adult patients who had been diagnosed with unipolar depression. This group did not have a history of ADHD, but their depressive symptoms—decreased concentration, forgetfulness, restlessness, irritability, affective lability, and poor stress tolerance—were similar to symptoms of ADHD.

Of the 61 items on the WURS, the researchers chose to analyze the data from the 25 items that showed the greatest mean difference between the group with ADHD and the comparison groups. The total mean ± SD score on the WURS for the group with ADHD was 62.2 ± 14.6. The score for the 100 comparison subjects was 16.1 ± 10.6, and the score for the comparison subjects with unipolar depression was 31.7 ± 17.4. For the 25 items that were analyzed, the mean difference in scores between the group with ADHD and the normal comparison group was statistically significant ($p < .0001$) using a 1-tailed t test. For 23 of the 25 items that were analyzed, the mean difference in scores between the group with ADHD and the patients with unipolar depression was statistically significant ($p < .001$) using a 1-tailed t test. The validity of the WURS was assessed by a correlation between scores on the WURS and the Parent Rating Scale of the patients with ADHD and the normal comparison group. The Pearson correlation coefficient for the normal comparison group was $r = 0.49$ ($p \leq .0005$, $df = 98$), and for the patients with ADHD, $r = 0.41$ ($p < .0005$, $df = 65$), demonstrating evidence of discriminant validity.

ADHD Rating Scale and ADHD Rating Scale-IV

The original ADHD Rating Scale (ADHD RS)[10] is a rating scale designed for children. Each of its questions corresponds to one of the symptoms in the revised third edition of the DSM (DSM-III-R).[7] In 1998, the ADHD Rating Scale-IV (ADHD RS-IV),[11] which is based on the 18 symptoms in the DSM-IV, replaced the ADHD RS. Both the original ADHD RS and the ADHD RS-IV were designed for parents or teachers to rate the frequency of a child's symptoms on a scale of 0 to 3: for the ADHD RS, 0 = not at all, 1 = just a little, 2 = pretty much, 3 = very much; for the ADHD RS-IV, 0 = never or rarely, 1 = sometimes, 2 = often, 3 = very often. The ADHD RS also measures, to a small degree, the severity of symptoms because many of the questions, like the corresponding items in the DSM-III-R, include the word "often." For example, a parent would rate the frequency that a child "often loses things necessary for tasks" on the ADHD RS. However, the word "often" was omitted from questions in the DSM-IV and on the ADHD RS-IV. Therefore the above item became "loses things necessary for tasks or activities" on the ADHD RS-IV. These scales have been validated and, although designed for children, can be modified by trained clinicians and administered to adults. One necessary change is the wording of some questions. For example, the phrase "play activities" might be replaced with "leisure activities" in the item "has difficulty sustaining attention in tasks or play activities."

Current Symptoms Scale

The Current Symptoms Scale[12] asks about adult patients' behavior in the past 6 months. Two versions are available: one was designed to be completed by adult patients and the other by an informant such as a spouse, parent, or friend. The scale includes 3 main sections, each of which assesses symptom severity on a scale of 0 to 3 (0 = never or rarely, 1 = sometimes, 2 = often, 3 = very often). The first section, like the ADHD RS-IV, contains questions that correspond to the 9 symptoms of inattention and the 9 symptoms of hyperactivity/impulsivity in the DSM-IV. Although similar to the language in the ADHD

RS-IV, the wording of the Current Symptoms Scale was tailored for adult self-report and observer report about an adult instead of parent or teacher report about children. Another section of the Current Symptoms Scale is a section for rating how often any symptoms from the 18 DSM-IV–based questions have interfered in patients' ability to function in areas such as home, work, school, community, driving, and financial management. The last section of the scale allows patients to rate how often they experience oppositional defiant disorder symptoms such as losing their temper, purposely annoying or defying people, and being easily annoyed.

Adult ADHD Self-Report Scale-v1.1

The Adult ADHD Self-Report Scale-v1.1 (ASRS-v1.1) Symptom Checklist,[13] a World Health Organization instrument, is composed of 18 questions and is similar to other rating scales for adults. Like the ADHD RS-IV and the Current Symptom Scale, the ASRS-v1.1 Symptom Checklist, which has a Screener with a subset of 6 questions (ASRS-v1.1 Screener), is based on the criteria for ADHD from the DSM-IV-TR[17] but measures only the frequency of symptoms. The developers of the scale decided to assess frequency-based ratings to allow patients to focus on how often symptoms occurred, rather than how severe they were. One unique feature of the ASRS-v1.1 Symptom Checklist is an expanded rating scale of 0 to 4, in which the "never or rarely" rating from the ADHD RS-IV has been separated: 0 = never, 1 = rarely, 2 = sometimes, 3 = often, 4 = very often. Researchers separated "never" and "rarely" because they concluded that these terms are too different to be considered part of the same response.

The wording of questions in the ASRS-v1.1 Symptom Checklist differs slightly from the wording in the ADHD Rating Scales. Unlike the items in the ADHD Rating Scales, the questions in the ASRS-v1.1 Symptom Checklist are designed to suit an adult, rather than a child, audience. For example, references to "play" and "schoolwork" have been deleted. The language in the ASRS-v1.1 Symptom Checklist also provides a context for symptoms to which adults can relate. For example, the item "loses things necessary for tasks or activities" from the ADHD RS-IV was changed to "how often do you misplace or have difficulty finding things at home or work?" in the ASRS-v1.1 Symptom Checklist. Another modification made to the ASRS-v1.1 Symptom Checklist was to eliminate questions that ask about more than 1 symptom. For example, "fails to give close attention to details or makes careless mistakes in schoolwork" from the ADHD RS-IV became "how often do you make careless mistakes when you have to work on a boring or difficult project?" for the ASRS-v1.1 Symptom Checklist.

The current version of the ASRS-v1.1 is available online (http://www.med.nyu.edu/Psych/training/adhd.html). The ASRS-v1.1 Screener may be used to correctly identify adult cases of ADHD, while the ASRS-v1.1 Symptom Checklist may be used to fully assess a patient's ADHD symptoms and may be particularly advantageous after a positive identification of ADHD with the ASRS-v1.1 Screener.

Compared with clinician-administered scales, self-report scales might save the physician and patient time. An interim report[18] described a study validating a pilot version of the ASRS-v1.1 Symptom Checklist versus the clinician-administered ADHD RS-IV in adult ADHD patients. Internal consistency for the investigator-administered and patient-administered scales and the intraclass correlation coefficient between scales for total scores were high. In addition, individual items had substantial agreement and the kappa coefficients for all items were significant ($p < .001$).

ADHD RATING SCALE USEFULNESS

If designed well and administered properly, ADHD rating scales can accurately reflect the frequency and severity of ADHD symptoms. However, research has shown that no rating scale alone will provide sufficient evidence to reliably make the diagnosis of ADHD.

In a study by O'Donnell et al.,[19] the authors assessed the usefulness of a modified version of the DSM-IV ADHD self-report checklist created by Murphy and Barkley.[20] The authors' primary purpose was to validate the assessment tool by determining whether scores on the checklist predicted membership in the study group that had been previously diagnosed with ADHD. The study included 42 college students, some of whom were recruited via flyers posted on a college campus and at nearby businesses and others by the offer of some course credit in an introductory psychology class. The group of individuals who had been previously diagnosed with ADHD included 14 volunteers, and the control group consisted of 28 volunteers who reported that they had never been diagnosed with ADHD. The difference in gender composition was small: about 50% to 60% of participants in each group were women. The mean age of participants in each group was 21 to 22 years, and the mean number of years they had been educated was 13 to 14 years.

The researchers modified Murphy and Barkley's 1995 ADHD self-report checklist by rearranging the order of the items to decrease patients' response bias. Items were arranged so that no 2 items from a single symptom subgroup (opposition/defiance, inattention, and hyperactivity/impulsivity) were next to one another. However, only patients' responses to the items in the inattention and hyperactivity/impulsivity subgroups were analyzed. The group previously diagnosed with ADHD was significantly more likely than the control group to report often or very often experiencing 7 of the 9 inattentive symptoms and 5 of the

9 hyperactive/impulsive symptoms in the DSM-IV. In addition, 5 of the inattentive symptoms and 3 of the hyperactive/impulsive symptoms positively predicted that patients experiencing 1 of those symptoms had previously been diagnosed with ADHD.

The authors identified the following limitations of the self-report checklist: adult patients' recall of childhood symptoms might not be accurate, the checklist does not determine whether other psychiatric diagnoses may be the cause of ADHD symptoms, and the checklist does not establish that the symptoms occurred across situations since childhood. Therefore, the self-report checklist may be a useful screening symptom assessment tool but should be combined with clinical interviews and informant ratings for a complete assessment of ADHD.

OBJECTIVE EVIDENCE OF ADHD SYMPTOMS

Although the information patients provide about themselves is crucial, it is always helpful to obtain data from other sources to corroborate patient self-report and to illuminate the history of impairment before a diagnosis of ADHD can be made. Evidence from sources other than the patient is needed because retrospective information given about one's childhood and present symptoms might not always be accurate and reliable. Patients might have difficulty recalling their behavior in childhood, and they also have subjective views of themselves that might result in the overestimation or underestimation of symptom severity. Patients should be interviewed about their symptoms, and when possible, their parents, employers, or significant others should also be interviewed to confirm the report. For example, teachers or employers might report whether the patient performed poorly in school or has had low scores on evaluations at work. Evidence should demonstrate that the symptoms are not due solely to lack of effort, a poor vocational match, a transient situation, or an environmental circumstance.

Interviewing individuals who know the patient well presents its own challenges. As with patients, parents may have clouded recollection of symptom severity and frequency because of the time that has elapsed. In addition, some adult patients may not want their employers to be involved. Significant others may not be able to report on childhood symptoms but could report current symptoms.

The validity of self-report versus collateral report has not been well established. Murphy and Schachar[21] conducted 2 studies to assess the accuracy of self-ratings and retrospective recall of ADHD symptoms in 150 adults. In the first study, 50 adults were asked to assess childhood ADHD symptoms, and symptoms were also rated by one of the patient's parents. The age range for the patient group was 20 to 50 years; their parents' age range was 45 to 93 years. In the second study, 100 adults rated their current ADHD symptoms, which were also reported by a significant other. The age range of the patient group and their partners was 25 to 65 years. Both studies used a rating scale based on the 18 symptoms in the DSM-IV with language appropriate for the adult population. Although patients generally reported more symptoms and a greater frequency than parents and significant others did, the correlations between patients' and informants' symptom ratings were statistically significant ($p < .001$) in both studies. Older age did not seem to affect the accuracy of patients' recall; the correlations between patient and informant ratings were significant in the 2 age groups in study 1 (34 years of age or older and younger than 34) and study 2 (40 years of age or older and younger than 40). Therefore, the researchers concluded that self-reporting and retrospective recall of one's own symptoms might be a valid and accurate description of ADHD symptoms. Despite the strong correlations, these studies were limited by their small population sizes and the fact that researchers did not perform a full ADHD assessment.

The usefulness of adults' self-report in making a retrospective childhood diagnosis of ADHD was recently tested in a follow-up study by Mannuzza et al.[22] The study included 2 groups of Caucasian male subjects with a mean age of 25 years. The first group comprised 176 subjects who had been followed since they were diagnosed between the ages of 6 and 12 years with hyperkinetic reaction of childhood according to DSM-II criteria. The second group was composed of 168 comparison subjects who had served as the control group in studies of the ADHD group since adolescence. For this follow-up, subjects were interviewed about the presence of ADHD symptoms in childhood by mental health professionals who were blinded to study groups. Many of the comparison subjects recalled having ADHD symptoms in childhood, and 11% were incorrectly identified as having ADHD. Furthermore, another study[23] found that almost 80% of a sample of 719 "normal" adults who came to 2 Department of Motor Vehicles locations to renew their licenses endorsed 6 or more ADHD symptoms as occurring "at least sometimes" during their childhood. Seventy-five percent of this sample endorsed experiencing 6 or more ADHD symptoms "at least sometimes" currently in their adult lives. Even when more stringent criteria for symptom frequency were applied (endorsing symptoms as occurring "often" or "very often" as opposed to "sometimes"), a full 25% of this sample endorsed having 6 or more symptoms occur during childhood, and 12%, during current adult functioning. These data suggest that adults may perceive that they have frequently exhibited typical ADHD symptoms throughout their lives and add further evidence that mere symptom endorsement on a rating scale is not sufficient to reliably diagnose this condition.

Because no definitive evidence exists for the validity of self-report versus informant report, clinicians should gather both self-report and collateral ratings for adult

patients' childhood and current behavior whenever possible. Patients might recall difficulties that they never shared with their parents or spouse, and someone other than the patient might be able to give a more objective rating of symptoms.

CONCLUSION

Diagnosing ADHD in adults is challenging because it depends on many factors. Several valid ADHD rating scales are available to assist in the clinical judgment of the diagnosis, although these scales are not meant to stand alone as diagnostic tools. Rating scales completed by adult patients should be part of a process that also includes clinical interviews and informant ratings and other objective supporting evidence of symptoms. More research is needed to compare self-report scales with informant-completed and investigator-administered scales with regard to the diagnosis of adult ADHD.

Disclosure of off-label usage: The authors of this article have determined that, to the best of their knowledge, no investigational information about pharmaceutical agents has been presented in this article that is outside U.S. Food and Drug Administration–approved labeling.

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