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Behavioral Health Matters

ADHD: More Prevalent or Better Recognized

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Attention deficit hyperactivity disorder (ADHD) is now the most frequently diagnosed neuro behavioral disorder of childhood. Although ADHD usually first presents in childhood, many persons with the disorder continue to experience symptoms throughout life.^[1]

The core behavioral symptoms of ADHD are inattention, hyperactivity, and impulsivity. Inattention includes careless mistakes, untidy work, lack of follow-through, poor listening, distractibility, and forgetfulness. Hyperactivity manifests as fidgeting or squirming, excessive running or talking, hand or foot tapping, leg swinging, or restlessness. Impulsivity is characterized by impatience, interrupting, grabbing objects, and greater likelihood of accidents. If untreated, the disorder may lead to academic underachievement, poor interpersonal relationships, low self-esteem, or increased risk of a range of comorbid psychiatric disorders.^[2] Even as adults, persons with ADHD are nearly 4 times as likely as those without ADHD to be involved in serious motor vehicle accidents; the ADHD group have more at-fault accidents, more citations, and worse accidents than those without ADHD.^[3]

ADHD is diagnosed 3 to 4 times more often in boys than in girls, but this ratio of boys to girls has lowered over the years, with ADHD now being diagnosed in more girls.^[4] Girls with ADHD are more likely to receive a diagnosis of the inattentive type. ADHD is also being diagnosed more frequently in adults. In a longitudinal study of boys with ADHD, Biederman and colleagues^[5] found that 38% of persons in whom ADHD was diagnosed during childhood still had full ADHD syndrome by age 19; 72% showed persistence of at least one third of their original symptoms; and 90% demonstrated evidence of significant impairment. Based on self-rating, Murphy and Barkley^[6] found a 4.7% prevalence of ADHD in a sample of 720 adults applying for or renewing their driver's licenses in Massachusetts. Over time, the symptoms of hyperactivity and impulsivity may recede, but the symptom of inattention is likely to persist.^[5]

ADHD has a clear genetic etiology; 2 studies showed a heritability index of greater than 0.8.^[7] First-degree relatives of children with ADHD show higher rates of tobacco use, substance abuse, affective disturbance, antisocial behavior, and anxiety.^[8] In addition to genetic vulnerability, exposure to maternal smoking and alcohol use within the first trimester of pregnancy is associated with a greater likelihood of ADHD in childhood.^[9] Maternal toxemia, premature labor, low birth weight, and delivery complications may increase the risk of ADHD later developing in a child.^[10] Environmental toxins, such as lead, cadmium, and carbon monoxide, have also been thought to cause ADHD; a

protective role has been shown for breast milk and zinc (from the kernel of whole wheat bread) in certain circumstances.^[11,12]

Findings of studies conducted in New Zealand, Canada, Germany, and the United Kingdom show an overall prevalence rate of 3% to 7%, similar to prevalence rates in the United States.^[13] The diagnosis of ADHD is most often made in children aged 6 to 12 years, during which time the American Academy of Pediatrics estimates a prevalence rate of 4% to 12%.^[14] Not only do these figures indicate a large problem, but the numbers are increasing rapidly. According to the US National Ambulatory Medical Care Survey, the number of children who received a diagnosis of ADHD increased 250% from 1990 to 1998.^[15] Kelleher and colleagues^[16] reported that pediatricians identified ADHD disorders in 9.2% of children in 1996, compared with 1.4% of children in 1979, an increase of 657%. Is there an epidemic or a heightened awareness of the problem, or is there a variety of forces at work pushing the diagnosis?

In a recently published study, Mandell and coauthors^[17] compared the frequency of diagnosis of ADHD with that of other psychiatric disorders in a large sample of hospitalized children. From 1989 to 2000, data from 339,560 hospital discharges that were associated with any psychiatric disorder were recorded for persons from birth to age 21 years. Although substance use disorders were the most common mental disorders recorded at hospital discharge and the incidence rose by 39% between 1989 and 2000, that increase was dwarfed by an increase in the diagnosis of affective disorders (138%). Diagnosis of ADHD, however, showed a whopping 381% increase over the study period. Only autism, which rose 358% over the study period, demonstrated a similar percentage increase. The authors speculated that a greater awareness of ADHD (and autism), confirmed by a NEXIS search of all US news outlets, may be driving the increase in diagnosis. In 2000, 838 articles on ADHD or autism were published, compared with just 25 articles in 1988. Popular awareness may fuel parental concern, which influences physicians' behavior.

Other factors contributing to greater recognition of ADHD include promotion of stimulants and antidepressants for the treatment of ADHD (especially atomoxetine) by pharmaceutical manufacturers, more convenient forms of dosing, and more widespread screening. The emergence of stimulants with extended duration of effect (up to 12 hours) has made treatment much more acceptable for many families.

Another reason for the increased popularity of the diagnosis of ADHD has been the expansion of Supplemental Security Income and the Individuals With Disabilities Education Act (IDEA) to include coverage of ADHD as well as mild mental retardation and mental illness. School systems are now required to implement plans for screening and diagnosis of all students with disabilities, which may help explain why the total number of children served by IDEA grew from 4.5 to 6.3 million between 1988 and 2000.^[18]

Screening for ADHD has become a growing industry. Diagnostic instruments include scales such as the Inattention/Overactivity With Aggression Conners Teacher Rating

Scale, a 10-item scale used to separate inattention and overactivity from oppositional defiance. There is also the Swanson, Nolan, and Pelham (SNAP-IV) scale, which contains *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*, criteria for ADHD and screens for other diagnoses, and the Swanson, Kotkin, Alger, M-Flynn, and Pelham (SKAMP) scale, which measures impairment of functioning in attention or behavior at home and at school.^[19] A self-test screening instrument for adults, the ADHD Self-Report Scale (ASRS), can be downloaded from the Internet.^[20] Using such tools, almost anyone can make the diagnosis of ADHD. Whether all diagnoses of ADHD are accurate and truly indicative of the need for pharmacologic or other treatment is, at this point, not entirely clear.

Conclusion

The dramatic increase in the number of children receiving diagnoses and treatment of ADHD should be studied further. Like many illnesses, ADHD is diagnosed according to the extent to which symptoms are deviations from a norm. The decision of where to set the parameters for diagnosis and treatment is not simple, is subject to many forces, and has important implications for the individual, family, and society.

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