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Attention Deficit Hyperactivity Disorder (ADHD) and ethnicity: A literature review



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Abstract

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most expensive mental disorders, costing U.S. citizens \$77 billion every year (Reinberg, 2004). Although ADHD affects between 3-7% of U.S. children (American Psychiatric Association [APA], 2000), there are many misconceptions about the disorder and concerns have been raised regarding appropriate diagnosis and treatment in children, adolescents, and adults. In addition to these concerns, several authors have noted that there is a lack of research regarding ethnicity and ADHD. The limited research that has been done is confusing with some studies indicating that there is no difference in rates of ADHD diagnoses (Nigg, 2001) and other studies indicating that African American children are placed in behaviorally disordered classrooms at higher rates (Maddox & Wilson, 2004). Reid, Casat, Norton, Anastopoulos, and Temple (2001) found that teachers were more likely to exhibit a bias in their rating scales if their students were African American. The purpose of this paper is to review the literature on ADHD, with a particular focus on the research of ethnicity and ADHD.



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Introduction

Attention Deficit Hyperactivity Disorder, or ADHD, is one of the most commonly diagnosed child clinical syndromes (Ferguson, 2000; Molina & Pelham, 2003; Nigg, 2001). According to the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)*, approximately 3-7% of U.S. children have ADHD (American Psychiatric Association [APA], 2000, p. 92-93). This disorder is broken down into three subtypes, each with nine symptoms: predominantly inattentive type, predominantly hyperactive/impulsive type, and the combined type. To qualify for any of the three subtypes, a person must have six of the nine symptoms in one subtype (see Appendix A). Other stipulations are that the symptoms must be present before the age of 7, must occur for at least 6 months, must take place in 2 or more settings (e.g. home, school, or neighborhood), and must cause clinically significant impairment in social, academic, or occupational functioning. Likewise, the symptoms may not be better accounted for by any other disorder (Brown, 2000; Gamarra, 2003; Hallahan & Kauffman, 2005; Hartnett, Nelson, & Rinn, 2004; Maddox & Wilson, 2004; Nigg, 2001; Root & Resnick, 2003; Samuel, Biederman, Faraone, & George, 1998; Semrud-Clikeman et al., 1999; Wilens et al., 2002; Wilkin Bloch, 2002).

The first of the three subtypes is the inattentive type. Individuals in this subtype are not able to get focused or stay focused on a task or activity, and they do not pay close attention to details. Organization is a challenge because people in this group are often distracted by everything around them. While playing or completing school or homework, these children often lose things such as toys, papers, and books; they may even forget to bring their books home or when they do remember, they bring the wrong ones.

If these students do complete their homework, it is often full of errors or erasures. Children in this category have difficulty processing information as quickly and accurately as others, so they are just seen as spacey, easily confused, daydreamers, and lethargic (National Institute of Mental Health [NIMH], n.d.; Root & Resnick, 2003; Wilens et al., 2002).

Children in the second subtype, hyperactive/impulsive, are very active and often talk without thinking. They often blurt out answers before questions have been completed and have trouble playing quietly. This is the easiest subtype to recognize because being too active is the most visible sign of ADHD. A child does this by running around or climbing constantly, fidgeting and squirming, or noisily tapping pencils. Since children who are hyperactive need to be in motion, they have difficulty staying seated in their chairs during class time (NIMH, n.d.; Root & Resnick, 2003; Wilens et al., 2002).

Lastly, the combined subtype brings together all the characteristics of the inattentive and the hyperactive/impulsive subtypes. Children with the hyperactive/impulsive or combined subtype cannot sit still or are otherwise disruptive, thus they will most likely be noticed in school, but the inattentive daydreamers may be overlooked. The impulsive child who acts before thinking may be considered just a "discipline problem," while the child who is passive or sluggish may be viewed as merely unmotivated. So when the child's hyperactivity, distractibility, poor concentration, or impulsivity begin to affect performance in school, social relationships with other children, or behavior at home, ADHD may be suspected (NIMH, n.d.). However, it is important to note that most children demonstrate all of these behaviors at times, so frequency and intensity of these behaviors need to be thoroughly assessed. Moreover, these behaviors

may be the result of depression, anxiety, boredom, poor instruction, or other environmental issues. This is why appropriate assessment and diagnosis is so critical and so controversial (Hartnett et al., 2004; Nigg, 2001). Skeptics note that ADHD is not a true diagnosis, but rather the result of poor parenting and a failing educational system (Hallahan & Kauffman, 2005). Others have speculated that the higher rates of behavioral disorders noted in African-American children may be due to cultural differences rather than neurobiological differences (Livingston, 1999).

Prevalence

ADHD is one of the most frequent reasons children are referred to guidance clinics (Hallahan & Kauffman, 2005). Since 3-7% of school age children have the diagnosis of ADHD, this means approximately 2 million children in the United States have the disorder; therefore in every classroom with 25 to 30 students at least one child will have ADHD (APA, 2000; Brown, 2000; Bussing, Schoenberg, Rogers, Zima, & Angus, 1998; Ferguson, 2000; Gamarra, 2003; Gingerich, Turnock, Litfin, & Rosen, 1998; Hallahan & Kauffman, 2005; Hartnett et al., 2004; Maddox & Wilson, 2004; Molina & Pelham, 2003; National Dissemination Center for Children with Disabilities, 2004; NIMH, n.d.; Redden et al., 2003; Reid et al., 2000; Reid, Casat, Norton, Anastopoulos, & Temple, 2001; Root & Resnick, 2003; Samuel, et al., 1999; Weiler, Bellinger, Marmor, Rancier, & Waber, 1999; Wilkin Bloch, 2002). In terms of gender, boys are diagnosed at a rate of 4 to 9 for every one girl. This occurs because boys are referred more often for behavioral problems, while girls are referred more for learning problems (Reid et al., 2000). Recent studies have shown that girls may be at an increased risk of remaining underdetected and untreated. A common explanation for this is that girls are presumed to have

ADHD with the subtype inattentiveness, which may be less obvious to parents and less likely to prompt help seeking (Bussing et al.). Therefore, gender-correlated behavioral problems may be identified more as ADHD in boys than in girls due to the frequency of disruptive classroom behavior exhibited by boys (Reid et al., 2000). Likewise, almost 50% of children with ADHD will be placed in special education programs for learning disabilities and behavioral disorders (Reid et al., 2001). Since special education programs are found in elementary and middle schools, ADHD was believed to be a childhood disorder that was outgrown around mid-to late-adolescence. Yet 50%-80% of children will continue to have symptoms of ADHD into adolescence. Also about 3%-7% of adults have ADHD, yet only 15% of them know they have ADHD (Barkley, Fischer, Fletcher, & Kenneth, 2002; Steinhausen, Dreschsler, Foldenyi, Imhof, & Brandeis, 2003). This may be due to the fact that they were not diagnosed with ADHD as a child and that behaviors are exhibited differently in adulthood. For example, instead of disrupting classrooms, adults tend to have poorer work records, more marital problems, additional car accidents, and do things impulsively such as smoke, shop, and talk (Maddox & Wilson, 2004).

Etiology

Medical

The exact cause of ADHD is unknown, yet many researchers offer different ideas as to the source of this disorder. A widely accepted view centers on the medical model which poses that ADHD is the result of neurological abnormalities, brain injuries, and/or genetics. The behavior of children with ADHD is thought by some researchers to be caused by a structural anomaly in the prefrontal cortex of the brain and/or neurotransmitter abnormalities (Brown, 2000; Gamarra, 2003). Yet other

researchers feel that it is other parts of the brain where the dysfunction lies including the basal ganglia, cerebellum, striatal regions of the cortex, or anterior cortical regions (Hallahan & Kauffman, 2005; Hartnett et al., 2004; Samuel et al., 1999). In regard to neurotransmitter dysfunction, those with ADHD may have more dopamine transporters than those without ADHD (Gamarra; Hallahan & Kauffman). Thus even though some researchers feel that the cause lies in neurological abnormalities, there is not a consensus on where the dysfunction is located. Scientists at the National Institute of Mental Health (NIMH) suggest that ADHD has a biological basis that serves as a link between a person's ability to pay close attention to detail and his or her level of brain activity. These researchers feel this has to do with the level of glucose used by the areas of the brain that inhibit impulses and control attention (Maddox & Wilson, 2004).

According to the medical model, another possible cause of ADHD is brain injury (NIMH, n.d.). Earlier theories were based on studies of brain injured children who exhibited signs or behaviors similar to those in a child with ADHD. In fact, one of the early terms for ADHD was Minimal Brain Dysfunction or MBD. Yet only a small percentage of children with ADHD have suffered significant traumatic brain injuries, therefore there is no specific evidence for this cause (NIMH) in a majority of cases. As for genetics, attention disorders often run in families, so there are likely genetic influences (NIMH). Research indicates that 25% of close relatives in families of ADHD children also have ADHD, whereas the rate is about 5% in the general population. Twin studies have also demonstrated strong evidence for a link between genetics and ADHD (Maddox & Wilson, 2004; NIMH). Therefore, these studies suggest that there may be

a moderately strong genetic link for the disorder (Gamarra, 2003).

Environmental

On the other hand, some researchers, especially mental health professionals, feel that ADHD is not simply a medical issue, but is influenced by the environment. According to Gingerich, et al. (1998), the environmental situation provides a lens for a person with ADHD to understand and be treated. Therefore, an appropriate "fit" between individual and environmental characteristics is necessary to minimize distress due to the disorder (Gingerich et al.). Many factors go into the environmental situation, including family life, society, and culture. Under the category of family life are subcategories of research that include: food additives and sugar, television viewing, lead, and substance abuses during pregnancy. Beginning in the 1970s, a number of theories emerged in literature concerning the contribution of foods and other dietary factors (such as sugar intake) to the development of ADHD (Gamarra, 2003). A few researchers have concluded that sugar intake and food additives (in things such as pop, cake, and candies) make a child more hyperactive, however improved research has concluded that additives do not cause ADHD. Furthermore, children may be more hyperactive depending on the setting in which they are receiving sugary foods, such as a party (Hallahan et al., 2005; NIMH, n.d.), which can make determining cause and effect difficult.

Some professionals feel that there are possible correlations between the use of cigarettes and alcohol during pregnancy and the risk of ADHD or high levels of lead in the body and ADHD (NIMH, n.d.). In terms of cigarettes, a recent twin study conducted by researchers at London's Institute of psychiatry found a "small but significant" link between maternal smoking during pregnancy and conduct disorder and ADHD

("Bad Behavior", 2005). Mothers that drink during pregnancy place their babies at risk for developing Fetal Alcohol Syndrome (FAS). One of the hallmark symptoms of this disorder is ADHD. The amount of alcohol intake that causes FAS or another less severe disorder known as Alcohol Related Neurodevelopmental Disorder is unknown, so all alcohol should be avoided during pregnancy (Burden & Croxford, 2005). Finally, according to the Center for Children's Health and the Environment (2002), lead exposure has been linked to IQ deficits, disruptive behavior, and inattention in school children. It has also been linked to ongoing behavioral problems in adults.

According to Hallahan and Kauffman (2005), some analysts believe that by watching too much television and playing too many video games, kids will develop ADHD. To date there is limited evidence that watching TV increases ADHD behaviors. However, one recent study found that the amount of television exposure between the ages of 1 and 3 increases the chances that a child will develop attentional problems at age 7 by 10% for every hour of television watched (Hecht & Hecht, 2004). It is important to note that this recent research is correlational in nature, which makes it difficult to rule out that parents who let their children watch more TV contribute in some other ways to their children's inattentive behaviors, perhaps because they provide less supervision. In the same way, poor parenting skills or family environments probably do not cause ADHD, but could make a situation worse. For example, poor parenting could result in a child being unprepared for school, this could lead to misbehavior and a higher likelihood of referrals by the teacher. If the professional conducting the referred evaluation does not do a thorough job, it is possible that the child will

be misdiagnosed and unnecessarily medicated (Hallahan & Kauffman). A similar hypothesis is made that teachers in poor, inner city schools over identify some students as having ADHD, thus they are blaming the children rather than their poor training or the absence of the appropriate tools for inattentive, behaviorally disordered students (Hallahan & Kauffman). Finally there are sociocultural misunderstandings that can occur. In other words, different cultures may have different standards for what is and is not acceptable behavior. For example, African-American boys are allowed to be more aggressive than Caucasian boys in society and school, and Asian-American students are seen as more disciplined and studious than any other ethnic group. There is no conclusive medical method for identifying ADHD, neither is there a conclusive environmental cause for it, thus controversy about ADHD exists and many wonder if children are being over diagnosed and overmedicated (Hartnett, et al., 2004; Zavadenko, 2002).

Assessment

Despite the fact that the cause is unclear, the proper way to assess ADHD is known. The assessment process should include a physical exam, interviewing at least three sources (parent(s), teacher(s), and child), the use of child behavior rating scales (by parents and teachers), a review of a child's complete school and health records, psychological testing, and behavioral observations of the child as well as parent and child interactions (Gamarra, 2003; HaileMariam, Bradley-Johnson, & Johnson, 2002; Hallahan & Kauffman, 2005; Root & Resnick, 2003; Weiler et al., 1999; and Wilkin Bloch, 2002). A physical exam is needed to rule out other medical problems that may cause or relate to ADHD symptomatology, while psychological testing looks to see if there are any

other psychological disorders that could better account for the problems. Interviewing sources is a critical part of the assessment because they provide information about a child's physical and psychological characteristics as well as his or her home life and how they interact with peers. A complete review of a child's records consists of looking at report cards, achievement tests, psychoeducational assessments, and medical/psychological treatment records to determine if a child's hyperactive and/or inattentive behavior was observed early on in the child's life. Structured diagnostic interviews and Child Behavior Checklists (CBCL) are often the primary focus of assessment, yet if a checklist is used as the only means of determining ADHD, the possibility of confusing ADHD with other disorders increases (Hartnett et al., 2004; Maddox & Wilson, 2004; Reid et al., 2001; Stein, Roizen, & Leventhal, 1999). Often times these checklists address only the expressions of the behavior, which can be biased or inaccurate.

According to Perry (1998), to help in assessing ADHD, specialists must consider the following questions: "Are these behaviors excessive, long-term, and pervasive and do they occur more often than in kids the same age? Are they a continuous problem, not just a response to a temporary situation? Does the behavior occur in several settings or only in one specific place like the playground or classroom?" (p. 113). Once these questions are addressed, the person's pattern of behavior is compared against the criteria listed in the DSM-IV-TR for ADHD. It is very important when comparing individuals with ADHD with others to make sure that people of their ethnicity are included. According to Gamarra (2003), the instruments used in evaluating the client should measure the same constructs in different cultures to avoid systematic bias. Because the assessment of ADHD is not a simple

matter, it should be left to specialists who should have sufficient time to conduct careful evaluations and be well acquainted with all the disorders that share characteristics of ADHD (Perry). The process of assessing ADHD may be time consuming; yet gathering as much information about the client is critical in accurately concluding if a child or an adult has the disorder.

Diagnosis

Since ADHD symptoms vary across settings, ADHD can be difficult to diagnose (NIMH, n.d.). It is also not uncommon to hear of misdiagnosis of ADHD, wherein a child's behaviors are attributed to ADHD when in actuality they are caused by or related to some other conditions or traits, such as giftedness (Hartnett et al., 2004). Given that ADHD tends to affect functioning most strongly at school, teachers may be the first to recognize a child's hyperactive and inattentive symptoms and may point it out to parents or consult with the school psychologist (NIMH). Therefore having a teacher involved in the assessment of ADHD is vital, yet at times doctors and psychologists may be influenced by a teacher's subjectivity and preconceived notion about the child, and this may result in the over diagnosis of ADHD. Also, if the disorder is not thoroughly assessed, it may be confused with such things as anxiety, depression, giftedness, a learning disability, bipolar disorder, conduct disorder, and oppositional defiant disorder. Misdiagnosis also has potentially harmful consequences (Hartnett et al., 2004). Once an ADHD diagnosis is placed on the child it may be very difficult to perceive his or her behavior any other way but within that framework (Hartnett et al.). Also, stimulant medication given unnecessarily leads to appetite suppression, insomnia, irritability, anxiety, sadness, and nightmares

(Hartnett et al.). Unnecessary pill-popping as a child can even possibly lead to depression in adulthood (Wren, 2005). In the same way, missing the diagnosis of ADHD can incapacitate a person from functioning at his or her fullest potential (Hartnett et al.).

Some medical doctors and psychologists tend to think ADHD diagnosis is not very difficult or they may be influenced by a teacher's subjectivity and preconceived notion about the child; this results in ADHD over-diagnosis and misdiagnosis (Zavadenko, 2002). A case study by Wolston and Caracansi (1999) provides the first published report of undiagnosed comorbid Graves disease complicating the treatment of Tourette's disorder and ADHD. This case report provides an example of the deleterious interaction between metabolic and psychiatric disorders in childhood. In the case study, a young boy was sent to a pediatrician, neurologist, and special education teachers for testing. The pediatrician focused on the diabetes mellitus (DM) type one, the neurologist attempted to treat the ADHD and Tourette's disorder, and the special education staff grappled with his behavioral problems. Since the three care providers had only minimal contact with one another, no effort was made to integrate the clinical understanding of the child's worsening symptoms or to view this deterioration as a signal for further medical evaluation. Therefore, fragmented medical care for children with complex psychiatric and medical disorders significantly increases the risk for missed diagnosis and subsequent mistreatment (Wolston & Caracansi).

Research has also been conducted comparing the frequency of diagnosis of ADHD in the U.S., versus countries such as England (Gamarra, 2003). By examining clinical records including drug prescription records, case registries, and epidemiological studies, it was

estimated that the diagnosis was about 20 times higher in the United States than in England. It was concluded that it occurred more in the U.S. because of different diagnostic criteria used and differences in cultural training of the professionals making the diagnosis across and within countries (Gamarra). Effective treatment options do exist, but a correct diagnosis must first be given (Hartnett et al., 2004).

Treatment

Once the diagnosis of ADHD is given there are two treatment options: the medication-only approach and the combination of the medication with the behavioral or psychosocial treatment. The combination of the medication and treatment has been proven the most effective because it not only gives clients medication, but it gives them time to talk about what is going on with them and how their behaviors can be adjusted (Ferguson, 2000; Redden et al., 2003). On the other hand, skeptics have noted that the amount of methylphenidate prescribed in the United States is much higher than any other country and they feel it is because those prescribing the medications are doing so inappropriately (Jensen et al., 1999). In prevalence studies, African-American children have less psychiatric medication use relative to Caucasian children (Stevens, Harman, & Kelleher, 2005). Therefore, even though African Americans are being diagnosed with ADHD more, they are being treated for ADHD less often. On the other hand, once an ADHD diagnosis is given, there is no difference in care found between Caucasians and Hispanics (Stevens et al.). About 80% of children who need medication for ADHD still need it as teenagers and over 50% need the medication as adults (NIMH, n.d.). Thus the stimulant medication given for ADHD is something that is often needed for a lifetime and the cost of it can add

up quickly, so it should not be wasted on people who do not need it at all.

Treatment plans should be tailored to the specific needs of the child and his or her family (Maddox & Wilson, 2004). The daily class schedules, length of school day, and homework demands all should be investigated in the process of the treatment planning for ADHD as well (Livingston, 1999). There are differences in overall demands of the school environment between private religious schools, other private schools, and public schools, and this must be taken into account as well. Private and public schools also vary as to the knowledge of the staff about ADHD and tolerance for imperfect behavior (Livingston). According to Maddox and Wilson, the treatment of ADHD requires medical, educational, behavioral, and psychological treatment. This involves parent training, behavior intervention strategies, an appropriate educational program, education regarding ADHD, individual and family counseling, and medication when required (Arnold et al., 2003; Maddox & Wilson).

Ethnicity

Even though there is a wealth of information available on ADHD, the vast majority of research on these individuals has been carried out on white, male, middle-class subjects (Gamarra, 2003; Gingerich et al., 1998; Maddox & Wilson, 2004; Samuel et al., 1999). Diversity variables have been generally overlooked in assessment, diagnosis, and treatment of individuals with ADHD in the United States; yet the disorder is looked on in a different light internationally. Gingerich, et al., noted that in most cultures, some children display disruptive behavior that is considered by adults to be unacceptable; however, important differences exist between cultures in regard to symptom terminology, diagnostic criteria, and treatment

modalities (Gingerich, et al.). In other words, what adults in one culture may tolerate behaviorally may not be tolerated in another one. Gingerich, et al., also noted that beliefs about etiology vary widely internationally and there is a lack of uniformity in assessment instruments. For example, professional psychologists and pediatricians from the United States and Italy were given a case description of a boy with disruptive behavior and the professionals did not differ in the frequency of diagnosing ADHD. However, they did significantly differ in the assessment to diagnose ADHD. Americans used more assessment procedures than Italians, and they also differed in their beliefs regarding etiology: Italians cited environmental influences and Americans more frequently cited organic influences (Gingerich, et al.). The prevalence rates of ADHD internationally also vary from country to country. In Canada, the rate for boys is 9% and 3.3% for girls. In China, the rates range from 1.3% to 13.6%, depending on the assessment instruments utilized. In Puerto Rico, the prevalence rates are around 9.5%. On the other hand, in Israel the rate is 3.9% (Gingerich, et al.).

Not only does the ADHD diagnosis vary internationally, it varies across the races in the United States as well. A study was conducted in 1974 by Blunden (as cited in Gingerich et al., 1998) that compared 1,300 African-American, Hispanic, and Asian-American children to the “white norms” using the hyperactivity rating scale. It was reported that African-American children had the highest mean hyperactivity rating, Asian-Americans had the lowest, and the mean ratings for Hispanics were around that of the white norm’s average. A similar study was conducted in 1977 by Anderson (as cited in Gingerich, et al.) reached the same findings.

More recent research has found that there are differences in the rate of hyperactivity as well. Compared to Caucasians, African-American children have the highest rate of hyperactivity and Asian Americans have the lowest rate (APA, 2000; Brown, 2000; Bussing et al., 1998; Ferguson, 2000; Gamarra, 2003; Gingerich et al., 1998; Hallahan & Kauffman, 2005; Hartnett et al., 2004; Maddox & Wilson, 2004; Molina & Pelham, 2003; NIMH, n.d.; Redden et al., 2003; Reid et al., 2000; Reid et al., 2001; Root & Resnick, 2003; Samuel et al., 1999; Weiler et al., 1999; Wilkin Bloch, 2002). Yet the problem is that we are uncertain whether these differences are due to real differences among the groups, rater bias due to ethnicity, or a combination of the two (Hallahan & Kauffman; Reid et al., 2000; Reid et al., 2001). Reid, et al. (2001) addressed the issue of rater bias with teachers and found that teachers do exhibit a bias in their ratings if their students are African American. The study showed that teachers considered African-American males 2.5 times more likely than Caucasian males to have ADHD and African-American females 3.5 times more likely to have the disorder. Caucasian teachers rated African Americans higher than white students; however, African-American teachers on average rated African-American students somewhat lower. African-American teachers tended to perceive less difference between African-American and white students than did white teachers. Thus, African-American students were more likely to be rated higher if they were rated by a white teacher as opposed to an African-American one (Reid et al., 2001). In 1991, African-American children constituted 16% nation’s school population and 35% of the special education population. Teacher bias in the referral process combined with biases in the assessment

of ADHD contributes greatly to overrepresentation of African-American children in special education classes. African-American males are particularly overrepresented in certain special education programs, as well as more likely to experience certain disciplinary practices (e.g. recipients of corporal punishment and suspension).

It is possible that these differences are a result of stereotypes. In a 2000 survey by Williams (as cited in Maddox & Wilson, 2004), research on stereotypes revealed many whites view African Americans negatively. Twenty-nine percent of whites felt blacks were unintelligent, 44% felt they were lazy, and 56% felt blacks preferred to live on welfare. Only a small percentage of whites reported positive views of blacks. Only 20% believed blacks were intelligent, 17% felt most blacks were hard working, 13% felt blacks prefer to be self supporting, and 15% felt most blacks were not prone to violence (Maddox & Wilson).

Despite the fact that African-American children are diagnosed as behaviorally disordered at much higher rates, they are unlikely to receive treatment. Research conducted by Bussing, et al. (1998) showed that African-American families are less likely to receive information or education about ADHD from health-care providers and reported using fewer health services for their children with ADHD. Also it revealed that African-American parents were less likely to apply behavioral problem labels or imply their child had ADHD, but they simply considered their child to be “bad.” Furthermore, Arnold, et al. (2003) reported that African Americans more often use such coping strategies as “counting one’s blessings” or religiosity rather than seeking services. If the above notion is true, those who are seeking services are those with more severe disorders, who are more impaired, and have greater comorbidity (Arnold et al.).

It is clear that there are important cultural differences in the demands of the environment in the homes, schools, and communities of people from different ethnic and cultural groups (Livingston, 1999). In regard to socioeconomic status SES, poor rural areas are found to have higher rates of ADHD versus urban areas (Gamarra, 2003). Also cultural variations exist in attitudes and beliefs about illness, choice of care, access to care, degree of trust toward majority institutions and authority figures, and tolerance for certain behaviors. Failure to have ADHD diagnosed earlier in life does not appear to be rare, but may be partly a function of ethnicity (Livingston). Culturally specific health beliefs and health behavior may explain a significant amount of care-seeking and adherence, patterns, but very little is known about whether and how ethnicity influences health perceptions and practices concerning ADHD (Bussing et al., 1998). Cultural differences in parent perceptions, teacher perceptions, and socioeconomic status all play a role in determining if a child is hyperactive. Stevens et al., (2005) found that Hispanics and African Americans were less likely to be diagnosed with ADHD by parent report than white children. In this study, the Hispanic group had the lowest level of reported ADHD

symptomology. The authors suggest that one reason for the decreased rate of hyperactivity in Hispanics could be because of acculturation, which has been associated with maternal reports of ADHD symptomatic children. This occurs because as the rate of acculturation increases, the rate of ADHD maternal reports decreases (Stevens et al.).

Moreover, low SES has been identified as a risk factor for developing ADHD for several possible reasons (Reid et al., 2001). SES may be associated with other ADHD risk factors (e.g. marital discord, large family size, and foster care placement). Low SES may expose kids to environmental or psychosocial stressors and may help explain why these children are more hyperactive than those children who come from families higher in status. Given that minorities are more likely to have a lower socioeconomic status and that 50% of unserved children with ADHD are African American (Maddox & Wilson, 2004), it is possible that ethnic differences in ADHD symptomology are really economic differences.

Conclusion

A pediatrician once stated “ADHD has become a wastebasket diagnosis for any child demonstrating inappropriate behavior...a renewal of the mindset

of parents, teachers, and physicians is essential for the correct diagnosis and treatment of all childhood behaviors” (HaileMariam et al., 2002, p. 99). Attention deficit hyperactivity disorder across the lifespan costs the United States billions of dollars, thus early and accurate diagnosis is important. It is equally important to find out if practitioners are exhibiting biases on the basis of ethnicity and to correct it as quickly as possible. Given the biopsychological nature of ADHD and the evidence that ethnic bias exists, it is surprising that more research has not been conducted regarding the perceptions of individuals who may diagnosis or treat ADHD. Future research should examine the potential for bias in these professionals. Finally, more research is needed regarding the increased likelihood of special education placement for African American children. This fact conflicts with growing evidence that these children are not always perceived as behaviorally disordered by their parents, nor in cases where an ADHD diagnosis is accurate, are they receiving the appropriate treatment. For those African American children who do indeed have ADHD, the lack of medication and therapy may result in lifelong consequences.

Appendix A: Diagnostic Criteria for Attention-deficit hyperactivity disorder (ADHD)

- A. Six or more of the following symptoms of **inattention** must have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental levels:

Inattention

1. often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
2. often has difficulty sustaining attention in tasks or play activities
3. often does not seem to listen when spoken to directly
4. often does not follow through on instructions and fails to finish schoolwork, chores, or duties in the workplace
5. often has difficulty organizing tasks and activities
6. often avoids, dislikes, or reluctant to engage in tasks that require sustained mental effort
7. often loses things necessary for tasks or activities
8. is often easily distracted by extraneous stimuli
9. is often forgetful in daily activities

Six or more of the following symptoms of **hyperactivity-impulsivity** have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental levels:

Hyperactivity

10. often fidgets with hands and feet or squirms in seat
11. often leaves seat in classroom or in other situations in which remaining seated is expected
12. often runs about or climbs excessively in situations in which it is inappropriate
13. often has difficulty playing or engaging in leisure activities quietly
14. is often “on the go” or often acts as if “driven by a motor”
15. often talks excessively

Impulsivity

16. often blurts out answers to questions before they have been completed
17. often has difficulty awaiting turn
18. often interrupts or intrudes on others

- B. Onset before the age of 7.
- C. Some impairment from the symptoms is present in two or more settings.
- D. There must be clear evidence of clinically significant impairment in social, academic, or occupational functioning.
- E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic Disorders and are not better accounted for by another mental disorder.

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