



e-quilibrium

- "electronic briefs on behavior and health"

Volume 9, Number 9
September 2013

Light on ADHD

Attention deficit hyperactivity disorder (ADHD) is marked by patterns of behavior that may include inattentiveness, impulsivity, problems with organization, and difficulty inhibiting activity (e.g., fidgeting, talking). While ADHD is typically thought of as a childhood problem, it is now understood that the behavior pattern can persist into adulthood and impair functioning. The condition can be costly in academic, social, occupational, and safety/health domains.

Worldwide prevalence of ADHD is thought to be greater than 5%, and certainly diagnostic rates of ADHD have increased. In the United States, childhood/adolescent prevalence rates in states range from 5-16%. Boys are more likely to be diagnosed with ADHD than are girls. Adult prevalence is estimated to be in the 4-5% range. Studies indicate that the heritability of ADHD is in the 70% range; this is comparable to height, which has a heritability of 60-80%.

An analysis published earlier this year in Biological Psychiatry found that there are geographic differences in the prevalence rates of ADHD. Specifically, areas with higher solar intensity (SI) (kilowatt hours/square meters/day), that is, the amount of sun reaching a specific location, have lower prevalence rates of ADHD. In the United States, the highest SI states are Arizona, New Mexico, Nevada, California, Utah, and Colorado. Internationally, Spain, Lebanon, Colombia, and Mexico have lower ADHD rates than France, Germany, and Belgium; solar intensity is higher in the former countries compared with the latter. Similar analyses were conducted for autism spectrum disorder and major depressive disorder, but

no relationship was found between SI and these disorders. Seasonal affective disorder (SAD) does have a geographic pattern.

One of the common problems in ADHD is difficulty falling asleep (sleep onset insomnia). It is likely that sleep deprivation exacerbates the impairment in attention. Evening use of modern media (including social media) has been hypothesized to impair sleep in genetically susceptible individuals, specifically because the wavelength of blue light emitted from these devices may suppress melatonin levels. The authors of the Biological Psychiatry article hypothesize that intense natural light in the morning in high SI geographic areas may help offset the effects of the blue light exposure. Interestingly, early-morning bright light therapy has been found to improve ADHD symptoms in other research. By the way, the authors assert that the association of high SI with lower prevalence rates of ADHD is not likely due to Vitamin D levels, although this has not been extensively studied.

There has been other research suggesting that ADHD symptoms improve after children have been involved in activities occurring in green outdoor settings, compared to indoor settings with artificial light. Additionally, daytime light has been found to enhance alertness, a pattern corroborated with functional MRI studies of the brain.

Of course, this does not mean that natural light exposure is the answer to the ADHD riddle. However, the interesting research findings are worthy of additional “attention” as effective management of ADHD is an ongoing challenge.

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