

Nutrition in the Treatment of Attention-Deficit Hyperactivity Disorder: A Neglected but Important Aspect

Roseanne Schnoll,^{1,4} Dmitry Burshteyn,² and Juan Cea-Aravena³

Attention-deficit hyperactivity disorder (ADHD) is multidetermined and complex, requiring a multifaceted treatment approach. Nutritional management is one aspect that has been relatively neglected to date. Nutritional factors such as food additives, refined sugars, food sensitivities/allergies, and fatty acid deficiencies have all been linked to ADHD. There is increasing evidence that many children with behavioral problems are sensitive to one or more food components that can negatively impact their behavior. Individual response is an important factor for determining the proper approach in treating children with ADHD. In general, diet modification plays a major role in the management of ADHD and should be considered as part of the treatment protocol.

KEY WORDS: ADHD; diet; nutrition.

Attention-deficit hyperactivity disorder (ADHD) is characterized by difficulty in delaying gratification, inattentiveness, distractibility, impulsive behavior, anxiety, and excessive motor activity (Barkley, 1981; Kanarek & Marks-Kaufman, 1991). It is often accompanied by emotional immaturity, aggressiveness, and poor academic performance (Barkley, 1981). It has been estimated that approximately 3% of children may suffer from ADHD, with the disorder six to nine times more common in boys than in girls (Johnson, 1988). There has been much speculation about the etiology of ADHD and both genetic and environmental factors have been implicated.

ADHD has been investigated extensively over the last 30 years. At this point most researchers agree that ADHD is a problem of complex etiology that can be investigated as a function of multiple interactions. The fields of psychology, education, and conventional and complementary medicine have attempted to find solutions to this disorder. Although

¹Department of Health and Nutrition Sciences, Brooklyn College of the City University of New York, Brooklyn, New York.

²Department of Psychology, Siena College, Loudonville, New York.

³Department of Psychology, Brooklyn College of the City University of New York, Brooklyn, New York.

⁴Address all correspondence to Roseanne Schnoll, PhD, RD, CDN, Department of Health and Nutrition Sciences, Brooklyn College of the City University of New York, 2900 Bedford Avenue, Brooklyn, New York 11210-2889; e-mail: rschnoll@brooklyn.cuny.edu.

clinicians and researchers alike acknowledge the complex etiology of ADHD, most treatment studies have focused on a limited number of modalities, often investigating just a single modality. This has been especially true with respect to neurofeedback treatments, with few exceptions (Lubar & Lubar, 1984, who combined neurofeedback with academic training; Thompson & Thompson, 1998, who combined neurofeedback training with metacognitive strategies, which included teaching strategies to succeed in math, reading, and listening, to treat ADHD). To devise more comprehensive treatments and conduct more meaningful research, clinicians and researchers will have to cooperate with other specialists or learn additional new treatment modalities.

It is also certain that different strategies will work for different patients diagnosed with ADHD and researchers are beginning to attempt to identify variables associated with treatment success. However, one of the components affecting ADHD has been relatively ignored.

The effect of diet and nutrition on ADHD is an issue that merits greater recognition by practitioners in the field. For example, Uhlig, Merckenschlager, Brandmaier, and Egger (1979) investigated the relationship between diet and brain electrical activity in children with ADHD. They found that certain food sensitivities not only influence ADHD symptomatology, but may also alter brain electrical activity. This research underscores the need for practitioners to understand the role of nutrition in ADHD.

In the past two decades there has been increasing interest in various aspects of diet that may adversely affect hyperactive children. Particular attention has focused on the role of food additives, refined sugars, food allergies, and fatty acid metabolism.

FOOD ADDITIVES

The food additives hypothesis was introduced by Feingold, who proposed that food additives, specifically synthetic food colors and flavors, and naturally occurring salicylates were responsible for hyperactive behavior in some children (Feingold, 1975). The diet, which Feingold labeled the Kaiser-Permanente (K-P) diet, named after the medical center where he worked, required children to eliminate all artificial colors and flavors as well as all foods containing salicylates. Feingold reported that as many as 50% of hyperactive children who carefully followed his regimen responded favorably. In the scientific community, however, controversy ensued surrounding the validity of Feingold's claims. Feingold's conclusions were based on his own clinical observations rather than on rigorous experimental evidence. Critics also suggested that the success of his diet may be related to the overwhelming attention parents gave to their children by focusing on dietary compliance, rather than to the specific effects of the diet. In response to the controversies, a number of agencies established guidelines for further research to investigate the relationship between diet and hyperactivity. Subsequent studies employing the guidelines recommended by these agencies fell into two groups: those that evaluated the behaviors of hyperactive children while on the Feingold diet as compared to a placebo diet (dietary crossover designs), and those that investigated responses to specific food dye challenges (Lipton & Mayo, 1983).

In the dietary crossover studies, hyperactive children were randomly assigned to either the Feingold K-P elimination diet or to a control diet and then crossed over to the other