Attention deficit/hyperactivity disorder, ADHD, affects 5 to 10 percent of children worldwide. It is characterized by disordered conduct, learning disability, mood and anxiety disorders and aggressiveness, as well as difficulty with arousal, working memory and muscular control. Dealing with a child who has ADHD can be tiring. Parents quickly feel overwhelmed and frustrated; their lives become controlled by their child’s disorder as they continually work with teachers and other professionals to meet their child’s special needs.

What is increasingly clear is that parents are eager for alternative options beyond masking and suppressing symptoms medically. Alternative therapies include nutrition, chiropractic, aromatherapy, naturopathy, acupuncture, massage therapy, yoga, tai chi, occupational therapy and sensory integration techniques. Many of these options are not covered by insurance, and Centers for Disease Control statistics show that parents of ADHD children already spend $1,574 in direct care costs for an ADHD child and have almost triple the healthcare expenses of other families. What type of program is a parent to choose?
Medical therapy typically consists of stimulant or antidepressant medication and cognitive behavioral therapy. Many children respond well to stimulant drugs, at least in the short term, and the benefits of cognitive therapy seem to persist longer. Many parents are wary, however, of the potential side effects of drug treatment. Side effects of stimulants include appetite suppression, insomnia, abdominal pain, headache, tachycardia and rebound irritability, as well as less common effects such as tics, over-focusing, compulsiveness, decreased social interaction, stereotypical behavior, reduced spontaneity and the rare occasion of acute hallucinations following long-term use. Drugs can also have a detrimental effect on nutrient stores in the body, as well as a possible influence on the integrity of other body systems.

When the benefits of medicine seem maxed out, dismayed parents seek other opinions and treatment approaches. Between 1999 and 2003 the utilization of chiropractic care increased as much as 200 percent, elimination diets by as much as 471 percent, herbal use by as much as 280 percent and vitamin/mineral therapy by around 33 percent. As these approaches become increasingly popular, evidence has begun to support of their use in ADHD children. Many families have combined drug treatments with diet therapy. This article will explore how nutrition can support a child with ADHD.

What Causes ADHD?

To understand the potential benefits that nutrition offers for a child with ADHD, it’s important to appreciate the current understanding on what causes ADHD. Much attention has been given to environmental contaminants such as heavy metals, dioxins, polychlorinated biphenyls (PCBs), pesticides, solvents and nicotine. Research results in these areas are often controversial, as targeted industries fight to protect their interests.

A promising area of research that has recently entered the spotlight is the field of epigenetics. Epigenetics looks at how changes in genetic makeup and gene expression can occur due to exposure to dietary and environmental toxins at vulnerable periods of development. To understand epigenetics, one can think of normal body function as a carefully orchestrated symphony—many chemical messages working together in rhythm to express health. If
exposure to dietary and environmental toxins interferes with these messages, the music might begin to lose its harmony.

The gastrointestinal system is the main barrier between the outside and inside environments of the human body. Food speaks chemically to our genes and supports the body’s natural mechanisms for detoxification. An individual thus becomes the conductor of his or her physiology, ensuring that the chemical players have the environment and nutrients required to perform their functions optimally. A failure to provide the body with the proper raw materials and environment to express health can lead to adverse physical and behavioral manifestations due to the effects on multiple body systems.

Science is just beginning to understand and appreciate the vast potential of these interactions. What is clear is that when you provide the body with a clean environment, physical movement, adequate nutrition and low emotional stress, genes have a higher probability of functioning normally. On the other hand, if you live a high-stress, sedentary lifestyle with a standard American diet high in processed foods and additives, the music sounds more like white noise leading to increased probability of dysfunction.

Think of your genetic makeup as a loaded weapon and your lifestyle choices and environmental surroundings as the trigger. Minor aches and pains, heartburn, stomachaches, headaches and chronic indigestion are often considered “normal” to everyday life, with no apparent environmental trigger. Despite experiencing these symptoms, many continue to play Russian roulette with their genes by living an unhealthy lifestyle. It’s even riskier for children with ADHD, who add to the mix unusual behavior patterns and heightened sensitivities to their physical and social environments.

Nutrition and lifestyle choices can help modulate some of the inherent differences in our genetic makeup and social history, giving us our best chance of functioning optimally at a given time. Chemicals found in fruits and vegetables, for example, help control gene expression and can support the body’s ability to rid itself of toxins. Our genetic differences can also account for the wide range of physical and behavioral presentations reported by parents.

Prevention Prevention of ADHD can begin before conception, focusing on ensuring adequate maternal health. A child is especially vulnerable during its first five years, starting with conception. Research has established that proper bonding and nutrition before, during and after pregnancy is required for proper childhood brain development. The tens of thousands of
industrial chemicals in our environment today could have individual or synergistic effects with one another on multiple body systems. Prenatal exposure to tobacco smoke, for instance, has been correlated with ADHD.

Aggression is a behavior commonly seen in ADHD children, especially males. Children born naturally have been shown to be less violent later in life. One study showed that forceps delivery and early separation correlated with a fourfold increase in risk of criminal violence by the age of 18. Whether the aggression seen in ADHD children (especially males) is related to birth trauma a question that remains unanswered.

Mothers have a degree of control. Prenatal yoga, for instance, has been shown to help protect against low birth rates and some complications such as preterm births (which have been correlated with ADHD). Chiropractic care for biomechanical pelvic balance has been shown to improve baby positioning, thereby reducing trauma to the baby during delivery.

Nutritional Approaches

Nutritional management plays a major role in caring for children with ADHD. Medications for ADHD often seek to improve levels of dopamine and norepinephrine, neurotransmitters important for attention and arousal. Proper nutrition can also increase the body’s ability to produce dopamine and norepinephrine as well as support the body’s natural systems for detoxification.

In a 2003 study published in the journal *Alternative Medicine Review*, 20 children diagnosed with ADHD were split into two groups. One group was given a multivitamin supplement and the other was treated with Ritalin. At the conclusion of the study, the children given the multivitamin had equal improvement in visual and auditory attention as those treated with Ritalin. The nutrients with the most support in the literature include essential fatty acids (particularly omega-3 in fish oil), magnesium, zinc, vitamin B6 and iron. These nutrients support general health and wellness, and play individual and collective roles in the synthesis of dopamine and norepinephrine, as well as hundreds of other reactions in the body. The amino acid tyrosine is also involved in the production of dopamine and norepinephrine. Children with ADHD are often found to have low levels of iron and zinc, as well.
Children with ADHD often experience insomnia, leading researchers to examine other herbs and supplements, such as melatonin, chamomile, lemon balm, St. John's wort and valerian, for their roles in relaxation. Gingko biloba and Pycnogenol have also been suggested for their respective roles in general brain health and protection from harmful free radicals.

Perhaps most important from a nutrition standpoint is the integrity of the gastrointestinal tract. A properly functioning GI tract has important roles in immunity and mood, so much that the nerve connections have been referred to as the “second brain.” Much attention has been paid to the potential sensitivity of children to artificial food colors and flavorings, as well as naturally occurring aspirin-like compounds known as salicylates. As children are at more vulnerable stages of neurodevelopment, it is possible that these ingredients can trigger disordered behavioral patterns.

Leaky gut syndrome is a condition characterized by sensitivities to commonly consumed foods. The gut is typically adept at only letting small molecules pass through to the bloodstream when properly digested. A leaky gut allows compounds to be absorbed that are foreign to the body’s immune system. These cause delayed allergies that can trigger symptoms in multiple body systems, including those that regulate behavior. Common culprits include wheat, dairy, peanuts, tree nuts and soy. Metabolic byproducts from wheat and dairy in particular have demonstrated opiate-like behavior and are suggested culprits in brain fog, as they can act as false neurotransmitters.

Elimination diets, including the Feingold diet, are popular treatments for children with ADHD. Elimination diets remove all suspected trigger foods for one to three months. If symptoms go away and then return upon reintroduction of the food, an allergy is suspected. The Feingold diet takes the elimination diet a step further. It removes all additives, preservatives and salicylates from the child’s diet.

Children with ADHD should be assessed for potential micronutrient insufficiencies that could be contributing to their behavioral condition. An elimination diet or Feingold diet may then be considered to gauge its effect on behavior. Sometimes even subtle improvements in behavior can go a long way toward improving family life, especially the life of the child in question. It is important to consult with a nutrition specialist, as medications and coexisting health problems can significantly alter the individual approach for your child.
Why Nutrition for ADHD?

Written by Alexander Rinehart, MSACN
Monday, 01 March 2010 00:00 - Last Updated Wednesday, 16 October 2013 12:26

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Alexander Rinehart recently graduated with honors from an applied clinical nutrition master’s program and is currently finishing his doctorate in chiropractic at New York Chiropractic College. He has a B.S. in social issues and health from Juniata College. Alexander recently contributed to a book chapter on “Diet-Related Behavioral Mechanisms in Times of Economic Restraint,” to be published in the International Handbook of Diet, Behavior and Nutrition. He is the founder of CoActive Health (CoActiveHealth.com), an integrated wellness practice currently offering nutrition consultations in Philadelphia and northern New Jersey.
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