Vitamins & Minerals for Children

 Literature Education Series On Dietary Supplements

By Gene Bruno, MS, MHS – Dean of Academics, Huntington College of Health Sciences

Each year from age one to adolescence, a child typically grows taller by two to 3 inches and heavier by 5 or so pounds. During this time, children spontaneously vary their food intakes to coincide with their growth patterns; they demand more food during periods of rapid growth than during slow periods. At times they seem to be insatiable, and at other times they seem to live on air and water.

Steady growth during childhood implies gradually increasing needs of all vitamins and minerals. Unfortunately, the nutritional qualities of children's diets are not always consistent, and sometimes are downright unhealthy. This is problematic in general, but especially critical in the case of several key nutrients.

Iron

Iron-deficiency anemia is the most prevalent nutrient deficiency among U.S. children. The high iron needs of growth combined with typically low iron intakes leave many children with inadequate levels of iron. Iron deficiency has well-known and widespread effects on children's behavior. In addition to carrying oxygen in the blood, iron transports oxygen within cells, which use to it to help produce energy. Iron is also used to make neurotransmitters—most notably, those that regulate the ability to pay attention, which is crucial to learning. An iron deficiency not only causes an energy crisis but also directly affects mood, attention span, and learning ability. To prevent iron deficiency, children must get 10 mg of iron daily.[1]

Calcium

Calcium is the most abundant mineral in the body. Before adolescence, children accumulate stores of calcium. Then, when they take off on the adolescent growth spurt and their calcium intake cannot meet the demands of rapid growth, they draw on those stores. The denser the bones grow in childhood, the better they can support teen growth and still withstand the inevitable bone losses of later life.[2]

Magnesium

Researchers have found lower levels of various minerals, including magnesium, among hyperactive children.[3] Another researcher found that magnesium deficiency occurred far more often among children with Attention Deficit Hyperactivity Disorder, or ADHD, than among non-ADHD. Furthermore, when that same researcher gave ADHD children a magnesium supplement, there was a decrease in hyperactivity—while ADHD children without magnesium supplementation experienced a hyperactivity increase.[4]

Zinc

As with magnesium, researchers have also found lower levels of zinc among hyperactive and ADHD children,[5] [6] and have suggested that zinc deficiency may play a role in the development of ADHD.[7] Consequently, supplementation of zinc (and other trace minerals) is recommended by some of those researchers.[8] One study even found that ADHD children with higher zinc levels actually responded better to therapy with the drug dextroamphetamine.[9]

Vitamin C

Vitamin C is well known for its role in immunity. A deficiency in vitamin C suppresses the immune response, and increases the likelihood for frequent infections.[10] This is an important consideration for most children who are exposed to the typical myriad of common bacteria, viruses and other pathogens that make their way through the classroom and schoolyard. This is further emphasized in a review of

23 studies which found that vitamin C supplementation decreased the duration and severity of common cold infections more so in children than adults.[11]

Vitamin A

Vitamin A plays a role in maintaining healthy epithelial tissue, which in turn helps to fight infection by preventing the invasion of bacteria or viruses.[12] Furthermore, an association between vitamin A deficiency and a substantially increased rate of ear infection has been observed in animals and children.[13] [14] In research where children with measles were treated with vitamin A, there was a lower rate of developing ear infections.[15] Other research has also shown that when children with ear infections were treated with vitamin A, vitamin C and vitamin E, a high response was achieved in reducing infection.[16]

Children's supplements

Children can be finicky eaters, so it's not always easy to get them to take a dietary supplement. There are many children's chewable supplements on the market, as well as some liquid products. The trick is to find one that your child likes well enough to take without a battle. Also, don't expect one chewable multiple vitamin to provide an adequate dose of all the key nutrients. Your best bet is to give your child three supplements: a chewable multiple vitamin, a chewable vitamin C, and a chewable calcium (preferably one with other minerals). This is what I give my son.

Conclusion

Although nothing can substitute for a balanced, nutritious diet, the daily use of vitamin and mineral supplements may help to assure an adequate intake of key nutrients. Daily supplementation can provide a "nutritional insurance policy" against nutrient deficiency and inadequacy.

References

1. Whitney E, Cataldo C, Rolfes S. *Understanding Normal and Clinical Nutrition, Fifth Edition* (1998) Wadworth Publishing Company, Belmont, California. pp. 641.
2. Whitney E, Cataldo C, Rolfes S. *Understanding Normal and Clinical Nutrition, Fifth Edition* (1998) Wadworth Publishing Company, Belmont, California. pp. 426, 639
3. Kozielec T, Starobrat-Hermelin B, Kotkowiak L, *Psychiatr Pol* (1994) 28(3):345-53.
4. Starobrat-Hermelin B, *Ann Acad Med Stetin* (1998) 44:297-314.
5. Starobrat-Hermelin B, *Ann Acad Med Stetin* (1998) 44:297-314.
6. Kozielec T, Starobrat-Hermelin B, Kotkowiak L, *Psychiatr Pol* (1994) 28(3):345-53.
7. Bekaroglu M, et al, *J Child Psychol Psychiatry* (1996) 37(2):225-7.
8. Kozielec T, Starobrat-Hermelin B, Kotkowiak L, *Psychiatr Pol* (1994) 28(3):345-53.
9. Arnold LE, *Int J Neurosci* (1990) 50(1-2):103-7.
10. Whitney E, Cataldo C, Rolfes S, p. 356-63.
11. Hemila H, *Med Hypotheses* (1999) 52(2):171-8.
12. Whitney E, Cataldo C, Rolfes S, *Understanding Normal and Clinical Nutrition, Fifth Edition* (1998) West/Wadsworth, Belmont, California, p. 379.
13. Chole RA, *Otolaryngol Head Neck Surg* (1979) 87(6):837-44.
14. Manning SC, Wright CG, *Otolaryngol Head Neck Surg* (1992) 107(5):701-6.
15. Ogaro FO, et al, *Trop Geogr Med* (1993) 45(6):283-6.
16. Karabaev KE,; Antoniv VF, Bekmuradov RU, *Vestn Otorinolaringol* (1997) (1):5-7.