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Children's Health and Nutrition

Critical Roles in Health and Development

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Numerous studies reaffirm again and again the importance of diet and exercise to kids and teens. The quality of diet and nutrition plays a direct role during this period of rapid cognitive development and physical growth. Sadly, studies consistently show that the "diets of U.S. children and adolescents do not meet current national dietary recommendations for good health" (American Dietetics Association, Feb 2009). World-wide we are seeing a decline in the consumption of milk, fruits, vegetables and whole grains in our children's diets and the increased consumption of sodas and high-fat low nutrient foods that provide empty calories. It's no wonder most children today don't even meet the recommended daily intakes for iron, zinc, copper, vitamin B6, thiamin, vitamin E, vitamin A and vitamin C. To make matters worse, since 1980, obesity rates have doubled among children and tripled among adolescents. Of children and teens 6 to19 years of age, 16%, or about 9 million of them, are considered overweight. Ultimately, childhood obesity predisposes adult obesity which in turn increases the risk of diabetes, heart disease, cancer and arthritis.

That is why the diet and exercise patterns developed during childhood and adolescence may spell the difference between health and risk of disease in later years. Studies continue to show that heart disease, cancer, stroke, diabetes and high blood pressure have their origins in early childhood and that the best time to start protecting the body is while still young. In fact, the early childhood years many times present the only window of opportunity to influence specific aspects of their health as adults. Height, for example, is mainly determined during the first 5 years of life, influenced both by genetics and nutritional factors. Good quality protein and an abundance of essential nutrients are critical at this time.

Another example is bone and tooth health and risk of osteoporosis later in life. These are almost entirely decided by the end of adolescence, which is why calcium intake and exercise during the kid and teenage years are so important.

As a result of these important needs, children have very specific and great nutritional demands. A balanced diet which delivers optimal levels of essential nutrients and other food factors is necessary for children:

- **To grow** – nutrients provide the building blocks of our body, the energy with which to fuel growth and the essential factors that make the reactions necessary for growth to happen.
- **To resist infections and heal faster** – our body's immune system is dependent on protein and optimal levels of certain vitamins and minerals to function. It is one of the first systems to suffer when a marginal nutritional deficiency exists.
- **To build strong bones and muscles**
- **To have energy** - diet not only provides fuel to keep our children's body active but it provides vitamins and minerals necessary to unlock energy from our foods.
- **To learn**: healthy, active, and well-nourished children and youths are more prepared and motivated to learn. In fact many studies have shown that well-fed kids, who do not skip breakfast, do better in school and perform better on tests.
- **To maintain a healthy weight** and avoid obesity-related diseases like type 2 diabetes
- **To feel good** about themselves and have a positive attitude at both home and at school.

Diets rich in plant nutrients or phytonutrients build a strong foundation for later health. Without them we are more susceptible to disease. In children, a diet rich in plant foods works 3 ways:

1) It establishes healthy eating habits
2) It is low in calories and high in fiber
3) It is high in protective nutrients.

Phytonutrients help our children fight disease by enhancing their immune system, detoxifying carcinogens and fighting inflammation. The body needs a wide array of these plant nutrients to stay healthy and thriving. Humans evolved to depend on a rich diet of 800 plant foods. However, today most children eat only about 3 or 4 plant foods, and those often are French fries, ketchup, apples and bananas. The phytonutrients humans should be getting are from the colorful plant sources: deep reds, yellows, oranges, purples, greens. The deep colors are indicative of the health-enhancing phytonutrients, such as carotenoids and flavonoids.

In addition, children and adolescents need lots of high quality protein to sustain growth since it is the main building material in our body. And while protein is the main building material in our body vitamins and minerals are essential for normal growth, metabolism and health as well. A recent report showed that children nowadays drink 18% less milk than they did 20 years ago, but they drink 23 percent more soft drinks. This is a shocking trend as we now know the gain in bone weight is fastest during the adolescent growth spurt. About 45% of the adult bone mass is formed at this time, and all the calcium must come from the diet or through supplements. Because the efficiency of calcium absorption from the best sources is only around 30%, it is important that the diet or supplement supplies an abundance of calcium to help build the densest bones possible. Achieving peak bone mass during childhood and adolescence is crucial to reduce the risk of osteoporosis in later years.

Along with providing our children with nutritionally sound diets, we should encourage them to keep physically active. Exercise itself affects heath and appetite, which in turn affects their energy, performance, and metabolism. All of these components work in conjunction to help our children grow and develop healthy, long lasting lives.

Research Updates

Probiotics--

Reducing Kid's Flu Symptoms?

According to recent findings published in the journal Pediatrics, supplementation with probiotics Lactobacillus acidophilus and Bifidobacterium animales was associated with a 73% reduction in fever incidence, a 59% reduced occurrence of runny noses, and 62% drop in coughing incidences. The study, conducted by researchers at Tongji University (Shanghai), the University of Texas at Houston, and Sprim USA (Frisco) demonstrates "a trend for a broader protective effect with the combination [of strains]". Supplementation with L. acidophilus alone produced only 53%, 41%, and 28% decreases in the symptoms respectively.

The study recruited 326 children (ages 3-5) from a child care center in China. They were randomly assigned to the single L. acidophilus strain, the combination of the strains, or a placebo. Supplements were given twice daily for six months. This was the first study to demonstrate more significant results with a combination of strains instead of a single strain preparation of probiotics. Researchers speculate that the mechanism is an "immune-enhancing effect...their ability to modulate immune responses through interactions with toll-like receptors" and the ability of the strains to stimulate dendritic cells.

Source: Leyer GJ, et al. Probiotic effects on cold and influenza-like symptom incidence and duration in children. Pediatrics. 2009 Aug;124(2):e172-9. Epub 2009 Jul 27. Epub 2009 Apr 28

Vitamin D for Girl Power

A new study from the UK investigated the correlation between vitamin D levels and 99 girls between the ages of 12 and 14. These researchers from the University of Manchester found that "vitamin D is positively related to muscle power, force, velocity and jump height in adolescent girls." The girls were recruited from an inner city, multi-ethnic school in Manchester. Blood samples were collected and although none of the girls had any physical symptoms of vitamin D deficiency, 75% of them had low vitamin D levels. Using a technique called jumping mechanography to measure the subjects' power and force, the researchers found that girls without vitamin D deficiency performed significantly better. The researchers concluded, "These data highlight the importance of vitamin D status on muscle formation in adolescent girls. Sub-optimal force might have implications for long-term bone development."

Source: Ramel A, et al. Moderate consumption of fatty fish reduces diastolic blood pressure in overweight and obese European young adults during energy restriction. Nutrition. 2009 May 30. [Epub ahead of print]

Did You Know?

- **Children eat nearly twice as many calories (770) at restaurants as they do during a meal at home (420)**
- **Children who consume fast food have higher intakes of fat, saturated fat, cholesterol and sodium – and lower intakes of fiber, calcium, and iron – than those children who do not eat fast food**
- **Consumption of milk – the largest dietary source of calcium has decreased 36% among adolescent girls**
- **The American Academy of Pediatrics recently doubled its daily vitamin D intake recommendations for babies, children and adolescents, and recommends supplementation because most children do not get enough from diet alone**
- **Children who eat breakfast perform better at school, yet many children skip breakfast**
- **Half of youngsters aren't meeting the recommended intake for calcium; two-thirds are falling short on vitamin E and zinc; and almost one-third aren't getting the iron they need from their diets, according to research from the USDA (United States Department of Agriculture).**

Fruits and Vegetables

Lymph Cancer Protection?

A new study for the Mayo Clinic found that diets rich in vitamin C, alpha-carotene, and proanthocyanidins were associated with a 22%, 29% and 30% respectively reduced risk of Non-Hodgkins lymphoma. The researchers reported that yellow/orange and cruciferous vegetables, including broccoli offered the greatest reductions in risk. Data was collected from 35,159 women aged 55 and 69 living in Iowa, USA over 20 years. Intakes of 204 or more servings per month (equivalent to 7 servings/day) of all fruit and vegetables were associated with a 31% reduction in NHL risk compared to those with intakes of less than 104 servings per month. "These results support a role for vegetables and perhaps fruits, and associated antioxidants from food sources, as protective factors

against the development of NHL and follicular lymphoma in particular," they concluded.

Source: Kelemen LE, et al. Vegetables, fruit, and antioxidant-related nutrients and risk of non-Hodgkin lymphoma: a National Cancer Institute-Surveillance, Epidemiology, and End Results population-based case-control study. Am J Clin Nutr. 2006 Jun;83(6):1401-10.

Lycopene and Atherosclerosis

Research suggests that the oxidation of LDLs plays an important role in the development of atherosclerosis, or the hardening of the arteries. A recent study from Korea of 264 women found that those with the highest levels of lycopene had the lowest levels of oxidized LDL-cholesterol. The results suggest that serum concentrations of lycopene can play and important role in the early stage of atherosclerosis by increasing LDL's resistance to oxidation. Researchers looked at blood samples of women between the ages of 31 and 75 to measure blood levels of lycopene as well as other carotenoids. The brachial-ankle pulse wave velocity (to measure arterial stiffness) was lowest in those with the highest average lycopene blood levels. The researchers concluded, "This result is in line with previous reports that lycopene showed superior antioxidant capacity or trend of decreased atherosclerotic risk compared with other antioxidant such as beta-carotene both in vitro and in humans."

Source: Yoe HY, et al. Independent inverse relationship between serum lycopene concentration and arterial stiffness. Atherosclerosis, Published online ahead of print, 13 August 2009

Multivitamins and Heart Health

According to the National Institutes of Health State-of-the-Science Panel, half of the American population uses dietary supplements regularly, and with good reason. Researchers analyzed data from 77,719 Washington State residents between the ages of 50 and 76 and looked at multivitamins, vitamins C and E supplement use over a 10 year period. This study published in the American Journal of Epidemiology found that the consumption of a multivitamin could reduce heart disease death risk by 16%. They also found that intakes of 215 mg of vitamin E per day for ten years was associated with a 28% decrease in the risk of death from CVD.

Source: Pocobelli G, et al. Use of supplements of multivitamins, vitamin C, and vitamin E in relation to mortality. Am J Epidemiol. 2009 Aug 15;170(4):472-83. Epub 2009 Jul 13.

Reduce Dementia Risk

Fish and Omega-3 Intake

A recent study of 14,960 people from across seven countries indicates that increased fish intake may reduce the risk of dementia by 20%. Researchers looked at data on fish and meat intake in almost 15,000 people aged 65 or older from low- and middle-income countries including China, India, Cuba, the Dominican Republic, Venezuela, Mexico, and Peru. They found a dose-dependent inverse association between dementia and fish consumption, while meat consumption was found to increase dementia risk. They report, "Our results extend findings on the association of fish and meat consumption…and are consistent with mechanistic data on the neuroprotective actions of omega-3 long-chain polyunsaturated fatty acids commonly found in fish."

Source: Albanese E, et al. Dietary fish and meat intake and dementia in Latin America, China, and India: a 10/66 Dementia Research Group population-based study. Am J Clin Nutr. 2009 Aug;90(2):392-400. Epub 2009 Jun 24.

Omega-3's

500 mg Recommended

A recent review of numerous studies support the intake of at least 500 mg daily of EPA plus DHA in healthy individuals, and up to 1,000 mg for people with heart disease or heart failure. These recommendations for healthy people are double the levels recommended by the European Food Safety Authority's (ESFA) Panel on Dietetic Products, Nutrition and Allergies (NDA). Lead author C. Lavie wrote "We now have tremendous and compelling evidence from very large studies, some dating back 20 and 30 years, that demonstrate the protective benefits of omega-3 fish oil in multiple aspects of preventative cardiology." The most compelling data came from four randomized controlled trials with EPA and DHA which involved around 40,000 participants.

Source: Lavie CJ, et al. Omega-3 polyunsaturated fatty acids and cardiovascular diseases. J Am Coll Cardiol. 2009 Aug 11;54(7):585-94.