

A selection of recent findings in the field of nutrition

Relationships between vitamin and mineral supplement use, dietary intake, and dietary adequacy among adolescents.

Despite the recognized association between diet and health, numerous studies show that adolescents do not consume diets that provide adequate amounts of key nutrients and this inadequacy can have immediate and long-term health effects. This US study which is part of a national survey of food intakes examined dietary intakes of major macronutrients and micronutrients considered to be of public health concern (calcium, iron, zinc, folic acid, vitamins A, B-6, C, and E) among adolescents and their frequency of vitamin and mineral supplement use. In this study, almost one-third of adolescents reported using supplements and 15.6% reported using them daily. The majority (65.5%) of supplement users reported taking multivitamins. Only one-third of supplement users reported taking individual vitamins or minerals (such as vitamin C, iron and calcium). Supplement use varied by gender, household size and region of residence. Adolescents using supplements reported lower intakes of total and saturated fat and had higher mean dietary intakes of most micronutrients than non-users. More than one-third of adolescents had dietary intakes of vitamins A and E, calcium and zinc that were <75% of their daily requirements. The authors conclude “to proper develop and implement programs aimed at improving the dietary intakes of US adolescents”.

[Stang J, et al. *J Am Diet Assoc* 2000;100:905-910]

Low-dose vitamin B-6 effectively lowers fasting plasma homocysteine in healthy elderly persons who are folate and riboflavin replete.

Even mild elevation in homocysteine level is associated with increased risk of cardiovascular events. Although the effect of folic acid on lowering homocysteine is well recognized, the role for vitamin B-6 in preventing or reducing hyperhomocysteinemia is inconclusive. It is possible that an effect of vitamin B-6 was missed in previous studies, because of much greater effect of folic acid and B-12 on hyperhomocysteinemia. This important clinical trial addressed this issue by investigating the effect of low-dose vitamin B-6 supplementation (1.6 mg/d for 12 weeks) on homocysteine concentrations in healthy elderly (63-80 y) who were not vitamin B-12 deficient and after repletion with folic acid (400 mcg/d for 6 weeks) and riboflavin (1.6 mg/d for 18 weeks). In this study, folic acid supplementation lowered hyperhomocysteinemia by 19.6% and vitamin B-6 supplementation reduced it by 7.5% after folic acid and riboflavin repletion. Although folic acid has a more significant effect on homocysteine concentration, it was encouraging to observe an effective albeit modest lowering effect of low-dose vitamin B-6 on hyperhomocysteinemia. The authors recommend “that any program aimed at the treatment or prevention of hyperhomocysteinemia should include vitamin B-6 supplementation”.

[McKinley MC, et al. *Am J Clin Nutr* 2001;73:759-764]

Folic acid supplements during pregnancy and risk of miscarriage.

It is well recognized that periconceptional consumption of folic acid supplements alone or in combination with other vitamins reduces the risk of birth defects, particularly neural tube defects (NTDs). There was an expressed concern that periconceptional supplementation with folic acid might increase the risk of miscarriage. A recent public health initiative in China provided an excellent opportunity to address this issue. Participants were women taking part in a recent folic acid campaign to prevent NTDs who registered in this campaign before becoming pregnant for the first time. The investigators examined the risk for miscarriage among women with confirmed pregnancies who had or had not taken pills containing only 400 µg of folic before and during



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pregnancy. In this large population-based study, the overall rate of miscarriage was 9.1%. It was reassuring to observe that the rates of miscarriage among women who had and had not taken folic acid pills before and during the first trimester were 9.0% and 9.3% respectively. This important study found no evidence that women's daily consumption of 400 µg of folic acid before and during early pregnancy influenced their risk of miscarriage.

[Gindler J, et al. *Lancet* 2001;358:796-800]

Relation between plasma ascorbic acid and mortality in men and women in EPIC-Norfolk prospective study: A prospective population study.

Ascorbic acid (vitamin C) is involved in many biological aspects in humans, because of its antioxidant property, collagen and hormone synthesis, haemostasis and protection of lipid membranes. It is suggested that these properties might reduce the risk of chronic diseases such as cancer and cardiovascular disease. Findings from studies investigating such an association have been inconsistent. This prospective study examined the association between plasma ascorbic acid and all-cause mortality, and mortality due to cardiovascular disease, ischaemic heart disease, and cancer in nearly 20,000 men and women aged 45-79 years. Participants were followed for 4 years after completing a health and lifestyle questionnaire at baseline and underwent clinical examinations. In this study, plasma ascorbic acid was inversely related to mortality from all-causes, and from cardiovascular disease, and ischaemic heart disease in men and women, with a dose-response relation across the whole population distribution. Risk of all-cause mortality in the top quintile of plasma ascorbic acid concentration was about half the risk compared to the lowest quintile. An increase of 20 µmol/ L in plasma ascorbic acid, which could be achieved by about a 50 gram/day increase in fruit and vegetable intake, was associated with approximately a 20% reduction in risk of all-cause mortality. Because fruit and vegetables are the main contributors to the dietary ascorbic acid intake, the authors conclude, "small increases in fruit and vegetable intake of about one serving daily has encouraging prospects for possible prevention of disease".

[Khaw KT, et al. *Lancet* 2001;357:657-663]

Suggested readings

Dietary and other methyl-group availability factors and pancreatic cancer risk in a cohort of male smokers.

[Stolzenberg-Solomon RZ, et al. *Am J Epidemiol* 2001;153:680-687]

Factors associated with calcium absorption efficiency in pre-and perimenopausal women.

[Wolf RL, et al. *Am J Clin Nutr* 2000;72:466-471]

Tomato lycopene and its role in human health and chronic diseases.

[Agarwal S, et al. *CMAJ* 2000;163:739-744]

Homocysteine and neurologic disease.

[Diaz-Arrastia R. *Arch Neurol* 2000;57:1422-1428]

Pregnant adolescent and adult women have similarly low intakes of selected nutrients.

[Giddens JB, et al. *J Am Diet Assoc* 2000;100:1334-1340]

Folic acid antagonists during pregnancy and the risk of birth defects.

[Hernandez-Diaz s, et al. *N Engl J Med* 2000;343:1608-1614]