

Abstract

Evid Rep Technol Assess (Full Rep). 2006 May;(139):1-117.

Multivitamin/mineral supplements and prevention of chronic disease.

Huang HY, Caballero B, Chang S, Alberg A, Semba R, Schneyer C, Wilson RF, Cheng TY, Prokopowicz G, Barnes GJ 2nd, Vassy J, Bass EB.

OBJECTIVES: To review and synthesize published literature on the efficacy of multivitamin/mineral supplements and certain single nutrient supplements in the primary prevention of chronic disease in the general adult population, and on the safety of multivitamin/mineral supplements and certain single nutrient supplements, likely to be included in multivitamin/mineral supplements, in the general population of adults and children.

DATA SOURCES: All articles published through February 28, 2006, on MEDLINE, EMBASE, and the Cochrane databases.

REVIEW METHODS: Each article underwent double reviews on title, abstract, and inclusion eligibility. Two reviewers performed data abstraction and quality assessment. Differences in opinion were resolved through consensus adjudication.

RESULTS: Few trials have addressed the efficacy of multivitamin/mineral supplement use in chronic disease prevention in the general population of the United States. One trial on poorly nourished Chinese showed supplementation with combined Beta-carotene, vitamin E and selenium reduced gastric cancer incidence and mortality, and overall cancer mortality. In a French trial, combined vitamin C, vitamin E, Beta-carotene, selenium, and zinc reduced cancer risk in men but not in women. No cardiovascular benefit was evident in both trials. Multivitamin/mineral supplement use had no benefit for preventing cataract. Zinc/antioxidants had benefits for preventing advanced age-related macular degeneration in persons at high risk for the disease. With few exceptions, neither Beta-carotene nor vitamin E had benefits for preventing cancer, cardiovascular disease, cataract, and age-related macular degeneration. Beta-carotene supplementation increased lung cancer risk in smokers and persons exposed to asbestos. Folic acid alone or combined with vitamin B12 and/or vitamin B6 had no significant effects on cognitive function. Selenium may confer benefit for cancer prevention but not cardiovascular disease prevention. Calcium may prevent bone mineral density loss in postmenopausal women, and may reduce vertebral fractures, but not non-vertebral fractures. The evidence suggests dose-dependent benefits of vitamin D with/without calcium for retaining bone mineral density and preventing hip fracture, non-vertebral fracture and falls. We found no consistent pattern of increased adverse effects of multivitamin/mineral supplements except for skin yellowing by Beta-carotene.

CONCLUSIONS: Multivitamin/mineral supplement use may prevent cancer in individuals with poor or suboptimal nutritional status. The heterogeneity in the study populations limits generalization to United States population. Multivitamin/mineral supplements conferred no benefit in preventing cardiovascular disease or cataract, and may prevent advanced age-related macular degeneration only in high-risk individuals. The overall quality and quantity of the literature on the safety of multivitamin/mineral supplements is limited.

PMID: 17764205

FREE FULL TEXT

