



Calcium and Vitamin D Contribute to Lifelong Bone Health

BREAKTHROUGH

Intake of calcium and vitamin D at the recommended levels, in the context of a healthy diet and coupled with exercise, contribute to healthy skeletal development in the first two decades of life and then to the maintenance of bone.

SCOPE OF THE PROBLEM

Attaining maximum bone mass in adolescence through adequate calcium and vitamin D intake coupled with regular weight-bearing exercise is known to protect against osteoporosis, a disease often acquired in the older adult years in which the density and quality of bone are reduced. Osteoporosis is a major public health threat for an estimated 44 million Americans, and it causes 1.5 million fractures each year, over 300,000 of which occur at the hip. Osteoporosis is under-treated and under-recognized, with differences in underserved and minority populations.

ECONOMIC BURDEN

In 2002, the estimated annual direct care expenditures in the U.S. for osteoporotic fractures—including hospitals, nursing homes and outpatient services—totaled \$18 billion. The loss of quality of life that occurs as a result of this disease, especially from fractures, has not been quantified, but must also be taken into account.

LANDMARK STUDIES

In 1992, a study showed that increased dietary intake of calcium during childhood is associated with increased bone mass in adulthood, and this increase in mass is important in modifying the later risk of fracture.¹ Additional reports on the adequacy of calcium for the healthy development of skeletal mass in children during pre-puberty and puberty followed.²⁻⁴ Studies also have investigated the benefits of calcium and vitamin D supplements in older adults with low intakes of each, and they have demonstrated the benefits of supplementation for the reduction of hip fractures and the maintenance of bone mass and density. This suggests that the nutritional benefits for bone health continue throughout the life cycle.⁵⁻⁶

PUBLIC HEALTH & EDUCATION APPLICATION

Studies, specifically on milk and milk products such as yogurt and cheese, showed a positive relationship between the intake of such products and bone mineral content and density in one or more skeletal sites. [7] This scientific base has contributed to the inclusion of milk and other dairy products in federal dietary guidance and emphasizing these items in federal nutrition programs, including the Special Supplemental Program for Women, Infants and Children (WIC).

Scientific discoveries in this area also have spawned the development of new food products and have led to a greater understanding of the prevalence of lactose intolerance in certain populations. Significant amounts of calcium now can be acquired from fortified breads, cereals, fruit juices, soy beverages, and commercial mineral water. These foods provide a suitable alternative for people who are lactose-intolerant and for vegans.

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