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Effect of lifestyle on bone mineral density in elderly populations

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Abstract
It seems that poor bone health, and osteoporosis is common in India. Peak bone mass achieved during puberty is a strong predictor of development of osteoporosis in later years. High prevalence of vitamin D deficiency in India is a major contributor to low bone mass. As a public health measure, it is important to encourage children to drink milk and play in the sun. This will ensure adequate calcium intake, vitamin D synthesis, and exercise. These three are the crucial elements in determining peak bone mass. There is thus an urgent need for greater public awareness in this regard. For the middle aged and elderly, early detection and treatment of osteoporosis with available agents can significantly reduce the risk of fractures and associated morbidity and mortality.

Keywords: Bone health, peak bone mass, osteoporosis etc.

Introduction

Osteoporosis is determine by low bone mass with decrement in bone tissue leading to enhance bone fragility, thus increasing the chance of fracture. On the basis of few available data and clinical experience, on estimated 25 million Indians population is affected. Osteoporotic fractures in India is common in both sexes. Recent studies clearly demonstrated widespread vitamin D deficiency across India, at all ages and in both sexes, particularly in the urban areas. Poor sunlight exposure, skin pigmentation and a vitamin D-deficient diet are some obvious causes for this finding. Indians have low bone mineral density as compared to the western Caucasians. This could be attributed to differences in skeletal size, however, the high prevalence of vitamin D deficiency is a major factor in the low bone mineral density and poor bone health of Indians. Healthy lifestyle that includes diet, exercise and sunlight exposure can have a major positive impact on the bone metabolism and bone health of Indian population. The public health measures are recommended for the population at large as they are efficacious, safe and cost-effective. The peak bone mass of the population can be increased significantly by appropriate and timely intervention in children.

The conditions such as hypertension and dyslipidaemia predispose to stroke and myocardial infarction, respectively, reflects poor bone health and predisposes to osteoporotic fractures. With increasing longevity of the Indian population, it is now being realized that, as in the West, osteoporotic fractures. are a major cause of morbidity and mortality in the elderly. Based on 2001 census, approximately 163 million Indians are above the age of 50, this number is expected to increase to 230 million by 2030. Even conservative estimates suggest that of these, 20 per cent of women and about 10-15 per cent of men would be osteoporotic. The total affected population would, therefore, be around 25 million. If the lower bone density is shown to confer a greater risk of fracture, as is expected, the figure can increase to 50 million.

Bone mineral density (BMD) is a quantitative trait, which is measured on a continuous scale by methods such as dual X-ray absorptiometry (DXA). Low bone mineral density is an important risk factor for fracture, and osteoporosis is mainly characterized by lowbone mineral density [Cummings *et al.* 1985; Melton *et al.* 1989] [1]. Osteoporosis results in more than 1.3 million osteoporotic fractures a year, with an estimated direct cost of $13.8 billion [Ray *et al.* 1997] in the United States alone. Osteoporosis is very common in older adults, and is associated with bone micro-architectural deterioration, which ultimately leads to morbidity and mortality. It is projected that by the year 2050, about 50% of the osteoporotic hip fractures in the world will occur in Asia. Though, dual X-ray absorptiometry score is a valid method for diagnosis of osteoporosis, due to cost and unavailability this method is not very effective in many low economic countries.

Risk factors

Human beings of all races and ethnicity are prone to osteoporosis and fracture. The study reveals that blacks have greater and Asians have lower bone mass than whites. The risk factors comprise of non-modifiable factors like female sex, old age, small thin built, Caucasian/Asians and family history of fractures. Ethnic differences in bone mineral density are strongly influenced by body weight. Important modifiable risk factors include calcium and vitamin D deficiency, sedentary life style, smoking, excessive alcohol and caffeine intake. A case control interview based study on postmenopausal women showed history of fracture in relatives, weight <60 kg, height <155 cm as significant risk factors for osteoporosis and regular consumption of milk, almonds, fruits as protective factors. The interview based study on patients admitted with hip fracture revealed calcium intake, increased body mass index and higher activity levels to have a significant protective effect on hip fracture in urban north Indian population. On the other side excessive caffeine intake and decreased agility increase the risk of hip fracture. Medical conditions like hypogonadism, thyrotoxicosis,

Cushing syndrome, anorexia nervosa malabsorption syndromes, chronic liver and renal disease, drugs like glucocorticoids and anticonvulsants, and chronic inflammatory conditions like rheumatoid arthritis may lead to secondary osteoporosis.

Life style approaches

The healthy lifestyle habits can significantly reduce your risk of osteoporosis and related fractures. Staying physically active is one of the best ways to keep bones healthy and strong is through weight-bearing activities. Focus on flexibility and specific strength-training exercises. This is especially beneficial at younger age because the body builds new bone into your 30s. After that, it's important to maintain bone strength through weight-bearing activities such as brisk walking, hiking, racquet sports, dancing, strength training, yoga, and tai chi. Many of these exercises can also help improve your balance. Wear the right protective gear, especially a helmet, when you're cycling, skate-boarding, or skiing, and during other activities where a spill could result in a serious head injury. Get enough calcium and vitamin D. Both of these nutrients contribute to bone health. Get calcium by consuming low-fat or nonfat dairy products, juice with added calcium, dark green vegetables, beans, and tofu. Get vitamin D from fortified beverages and cereals, fatty fish, and eggs. Quit smoking. Smoking increases your risk of osteoporosis. Living with someone who smokes indoors will also weaken your bones, or talk with your doctor about getting help. Avoid excessive weight loss. Maintaining a healthy weight is important, excessive dieting may weaken the bones. Improve balance. Osteoporosis weakens bones, and a fall can cause the bones to break. Poor balance and coordination are often lead to fracture. To improve your balance, try the exercises shown in our Balance Exercises slide show. Avoid high-heeled or loose-fitting shoes, and eliminate hazards around your home such as loose throw rugs, slippery bathtubs, and wet or mossy steps. There is much that individuals can do to promote their own bone health, beginning in childhood and continuing into old age. These activities contribute not only to bone health, but to overall health and vitality. Since many nutrients are important for bone health, it is important to eat a well-balanced diet containing a variety of foods, including grains, fruits and vegetables, nonfat or low-fat dairy products or other calcium-rich foods, and meat or beans each day. In addition to meeting recommended guidelines for physical activity (at least 30 minutes a day for adults and 60 minutes for children), specific strength-and weight-bearing activities are critical to building and maintaining bone mass throughout life. Individuals should see a health care provider if they have a medical condition or use medications that can affect the skeleton. Women should also see their health care provider if menstrual periods stop for 3 months.

Conclusion

It seems that poor bone health, and osteoporosis is common in India. Peak bone mass achieved during puberty is a strong predictor of development of osteoporosis in later years. High prevalence of vitamin D deficiency in India is a major contributor to low bone mass. As a public health measure, it is important to encourage children to drink milk and play in the sun. This will ensure adequate calcium intake, vitamin D synthesis, and exercise. These three are the crucial elements in determining peak bone mass. There is thus an urgent need for greater public awareness in this regard. For the middle aged and elderly, early detection and treatment of osteoporosis with available agents can significantly reduce the risk of fractures and associated morbidity and mortality.

References

1. Melton LJ. 3rd. adverse outcomes of osteoporotic fractures in the general population. J Bone Miner Res. 2003; 18:1139-41.
2. Johnell O, Kanis JA. An estimate of the worldwide prevalence and disability associated with osteoporotic fractures. Osteoporos Int. 2006; 17:1726-33.
3. Collinge CA, Lebus G, Gardner MJ, Gehrig L. A comparison of quantitative ultrasound of the calcaneus with dual-energy x-ray absorptiometry in hospitalized orthopaedic trauma patients. J Orthop Trauma. 2010; 24:176-80.
4. Nordin BEC. International patterns of osteoporosis. *Clin Orthop* Gupta AK, Samuel KC, Kurian PM, Rallan RC. Preliminary study of the incidence and aetiology of femoral neck fracture in Indians. Indian J Med Res. 1966; 45:17-30, 1967; 55:1341-8.
5. Vaishnava H, Rizvi SNA. Frequency of osteomalacia and osteoporosis in fractures of proximal femur. Lancet. 1974; 1:676-7.
6. Keramat A, Mithal A. Risk factors for osteoporosis in urban Asian Indian women presenting for a preventive health checkup. 2nd Joint Meeting of the European Calcified Tissue Society and the International Bone and Mineral Society, Geneva. 2005, 25-29.
7. Jha R, Mithal A, *et al*. Pilot case control investigation of risk factors for hip fractures in the urban Indian population. 2nd Joint Meeting of the European Calcified Tissue Society and the International Bone and Mineral Society, Geneva. 2005, 25-29.