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Nutrition and bone health –Excerpts from the Osteoporosis conference 2014, Birmingham, UK.

Background: The 2014 Osteoporosis Conference was held in Birmingham, UK from 30th November to 2nd December, 2014. The conference covered a varied topic for more than 740 clinicians, health professionals and non-clinical scientists from over seven countries working in the field of osteoporosis and bone health. Research findings were organised into 30 oral presentations and 97 poster presentations. There were six educational updates, one of which addressed “Lifestyle- nutrition and exercise” and it was presented by Dr Kate Ward of MRC Human Nutrition Research, Elsie Widdowson Laboratory, Cambridge, UK.

Nutrition and bone: According to Dr Ward, healthy pre- and post natal bone growth, maintenance and repair during adulthood, and prevention of excess loss in ageing are all important periods for bone health [1,2]. Nutrition contributes to musculoskeletal health in several ways which includes:

1. Provision of bone forming minerals (calcium, zinc) and ensuring healthy longitudinal growth,
2. Supply of vitamins involved in calcium-phosphate homeostasis (vitamins D,K and C),
3. Supply of energy, amino acids and ions (e.g. copper).
4. Ensuring healthy muscle function (protein, vitamin D status).
5. Maintenance of a healthy weight [3-7].

The major nutritional factors in determining bone health at all stages of life are undoubtedly calcium and vitamin D status. Calcium and vitamin D supplementation has been shown to reduce falls and fractures during ageing but the evidence is not consistent [8,9]. There is limited evidence for a continuous positive benefit of increasing either calcium intake above the recommended dietary allowance (RDA) or vitamin D status above the optimal serum 25(OH)D concentration in growing children [10,11]. Although the effects of calcium and or vitamin D supplementation studies have not been consistent and differ depending on the population being studied. The need for adequate intake of calcium and vitamin D remains relevant and important in children and adults for optimal health bone. Protein intake is positively associated with bone and muscle accumulation during growth [5]. Recently, dietary pattern analysis has shown that improving the nutrient density (quality) of the diet during adulthood is associated with greater bone mineral density in the seventh decade in women [12]. Subsequently, methods to describe the diet as a whole, may be useful to increase the understanding of the role of nutrition in musculoskeletal health [13,14].

Conclusion: Diet plays a major role in determining bone health. A “one size fits all” approach does not apply as it is important to understand the contribution of nutrition across life, between genders and in different populations. For optimal bone health, children and adults that are vitamin D deficient and/or with calcium intake below RDA will benefit from vitamin D and/or calcium supplementation respectively.

References as provided by Dr Kate Ward

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