

Calcium fortification or supplementation in postmenopausal females: Recent controversy

“Get your facts first and then you can distort them as much as you please”

–Mark Twain

Calcium supplementation along with Vitamin D has been a well-recommended public health intervention for the prevention of osteoporotic fractures and improved bone health. The Institute of Medicine recommends 1200 mg calcium every day for people above 50 years of age for the same.^[1] Clinical practice guidelines on postmenopausal osteoporosis by the Indian menopause society (updated in 2015) recommend 800 mg of calcium daily.^[2] Since most of the people cannot get this much calcium from food or food supplements, calcium supplements are recommended. This old age practice has been challenged by a new study published in BMJ^[3] recently and put calcium in tight spotlight and left patients as well as health providers confused. This new study is a systematic review of randomized controlled trials (RCTs) and observational studies of calcium intake with fracture as end-point. The result of this random effect meta-analysis suggests that widespread untargeted calcium supplements use is unlikely to result in meaningful reductions in incidence of fracture. On the other hand, calcium supplements probably have an unfavorable risk-benefit profile. Extra calcium may cause increase in myocardial infarction renal stones or gastrointestinal symptoms.^[4-6] The authors recommended against increased calcium intake for fracture prevention either with supplements or dietary sources. This controversy was further supported by Hopkins study explaining physiological mechanism of cardiovascular adverse effects by calcium supplements^[7] due to extraskeletal deposition including coronary arteries. In the latest US Preventive Services Task Force (PSTF) statement (2013), it recommends against daily supplementation with 1000 mg or less

of calcium for the primary prevention of fractures in postmenopausal women. Such mounting evidence against a mass medication of older woman definitely needs reconsideration of these controversial results.

The prestigious BMJ meta-analysis^[3] included only two RCTs and 26 cohort studies of dietary calcium. Dairy products may not be that bone healthy because of their acidic nature hindering absorption. Type of calcium supplements was also not noted. This meta-analysis did not take into account, the individuals not sustaining fracture and also for the other vitamins and minerals. So far, there have been no RCTs of calcium supplementation with primary cardiovascular end points. A collaborated meta-analysis of RCTs on effect of calcium with or without Vitamin D supplementation on verified coronary heart disease hospitalization and death in postmenopausal women was undertaken by Lewis *et al.*^[8] and concluded that current evidence does not support the hypothesis that calcium supplementation increases coronary heart disease or all-cause mortality risk in elderly women. The US PSTF recommendations probably are based on the largest Women’s Health Initiative study of 36,000 women between the ages of 50 and 79 years randomly assigned to 1000 mg calcium with 40 IU Vitamin D or placebo pills. Number of fractures was similar in each group at the end of 7 years; however, this was a subset analysis and incidence of hip replacement was 29% lower among women who actually took supplements.

But this time tested, scientifically backed factual calcium intervention cannot be just discarded. Dose and type of calcium have to be reconsidered. The mechanism of the adverse vascular effects of calcium may be due to sudden acute increase in serum calcium level following

Access this article online

Quick Response Code:



Website:

www.jmidlifehealth.org

DOI:

10.4103/0976-7800.185331

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How to cite this article: Aggarwal N, Sharma S. Calcium fortification or supplementation in postmenopausal females: Recent controversy. *J Mid-life Health* 2016;7:54-5.

the ingestion of supplements. Calcium-fortified foods also may increase calcium levels in the similar comparable way but the amount of such foods consumed is lesser. Biological effects of calcium from intake of balanced diet are different, and observational data are mostly reassuring. Thus, most of the calcium requirements must be met from the balanced diet and if supplements needed, calcium-rich foods to be preferred and calcium supplements must not be given as bolus.

Whatever may be the verdict on calcium intake in future, bone health does need to be looked after and interventions to be promoted are the ones having reduced fracture risks such as balanced diet, lifestyle modification, exercise, cessation of smoking, and reduced alcohol intake.

Happy and Healthy Bone ageing.....!

Neelam Aggarwal, Sudhaa Sharma¹

Additional Prof. Department of Obstetrics and Gynaecology, PGIMER, Chandigarh, ¹Prof. PG Department of Obstetrics and Gynaecology, GMC, Jammu, Jammu and Kashmir, India
E-mail: drneelamaggarwal@gmail.com

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