

Original Article

Efficacy of vitamin D₃ supplementation in preventing fractures in elderly women: A meta-analysis

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Gert J.D. Bergman^a, Tao Fan^b, Jeffrey T. McFetridge^c, Shuvayu S. Sen^b

^aMapi Values, Houten, The Netherlands

^bMerck & Co., Whitehouse Station, NJ, USA

^cLehigh University, Bethlehem, PA, USA

^bMerck & Co., Whitehouse Station, NJ, USA

Address for correspondence: Tao Fan, PhD, Merck & Co., One Merck Drive, WS2E-85, Whitehouse Station, NJ 08889-0100, USA. Tel.: +1 908 423 4627; Fax: +1 908 735 1688; tao_fan@merck.com

Abstract

Background:

The efficacy of vitamin D₃ in preventing fractures and falls has been explored in a number of clinical trials. However, recent evidence revealed new questions about the adequate doses of vitamin D₃ supplementation and its efficacy in fracture prevention independent of calcium supplements for various types of fractures.

Objective:

To conduct a meta-analysis to estimate the effectiveness of 800 IU daily vitamin D₃ supplementation for increasing bone mineral density (BMD) and preventing fractures in postmenopausal women.

Methods:

Medline and EMBASE were searched for controlled trials comparing the effectiveness of cholecalciferol (vitamin D₃) against placebo with or without background calcium supplementation in the treatment of postmenopausal women.

Results:

Eight controlled trials evaluating the effect of vitamin D₃ supplementation with or without calcium were assessed. Of 12 658 women included in a Bayesian meta-analysis, 6089 received vitamin D₃ (with or without calcium) and 6569 received placebo (with or without calcium). Compared to placebo, vitamin D₃ with calcium supplementation showed beneficial effects on the incidence of non-vertebral (odds ratio [OR] 0.77, 95% credibility limit [CL] 0.6–0.93) and hip (OR 0.70, 95% CL 0.53–0.90) fractures, while the effects on non-vertebral-non-hip fractures (OR 0.84, 95% CL 0.67–1.04) % point increase) were associated with more uncertainty. Vitamin D₃ supplementation showed a 70% probability of being a better treatment than placebo for the prevention of non-vertebral fractures, hip fractures, and non-vertebral, non-hip fractures. Compared to calcium supplementation, vitamin D₃ plus calcium reduced non-vertebral fractures (OR 0.68, 95% CL 0.43–1.01) and non-vertebral, non-hip fractures (OR 0.64, 95% CL 0.38–0.99), but did not reduce hip fractures (OR 1.03, 95% CL 0.39–2.25). Key limitations to this analysis include a small number of studies and heterogeneity in the study populations.

Conclusions:

This meta-analysis supports the use of vitamin D₃ of 800 IU daily to reduce the incidence of osteoporotic non-vertebral, hip, and non-vertebral-non-hip fractures in elderly women. Vitamin D₃ with calcium appears to achieve benefits above those attained with calcium supplementation alone for non-vertebral and non-vertebral-non-hip fractures.

Read More: <http://informahealthcare.com/doi/abs/10.1185/03007991003659814>