

ORIGINAL RESEARCH COMMUNICATION

Potentially modifiable determinants of vitamin D status in an older population in the Netherlands: the Hoorn Study^{1,2,3}

Rob M van Dam, Marieke B Snijder, Jacqueline M Dekker, Coen DA Stehouwer, Lex M Bouter, Robert J Heine and Paul Lips

¹ From the Institute for Health Sciences, Vrije Universiteit Amsterdam, Netherlands (RMvD and MBS); the Department of Nutrition, Harvard School of Public Health, Boston, MA (RMvD); the EMGO Institute (MBS, JMD, LMB, RJH, and PL) and the Department of Endocrinology (RJH and PL), VU University Medical Centre Amsterdam, Netherlands; and the Department of Internal Medicine, Academic Hospital Maastricht, Maastricht, Netherlands (CDAS)

Background: Inadequate vitamin D status is common in many populations around the world.

Objective: The aim was to evaluate potentially modifiable determinants of vitamin D status in an older population.


Design: This was a cross-sectional study from a population-based cohort including 538 white Dutch men and women aged 60–87 y. Vitamin D status was assessed by plasma 25-hydroxyvitamin D [25(OH)D] concentrations.

Results: In the winter period, 51% of the subjects had 25(OH)D concentrations <50.0 nmol/L. Greater body fatness and less time spent on outdoor physical activity were associated with worse vitamin D status. Regular use of vitamin D–fortified margarine products [odds ratio (OR) in a comparison of intake of ≥20 g/d with none: 0.41; 95% CI: 0.20, 0.86; *P* for trend < 0.001], fatty fish (OR for servings of ≥2/mo versus none: 0.41; 95% CI: 0.16, 1.04; *P* for trend = 0.01), and vitamin D–containing supplements (OR for ≥1/d versus none: 0.33; 95% CI: 0.17, 0.63; *P* for trend < 0.001) were inversely associated with vitamin D inadequacy [25(OH)D <50.0 nmol/L]. We estimated that combined use of margarine products (20 g/d), fatty fish (100 g/wk), and vitamin D supplements (≥1/d) was associated with a 16.8 nmol/L higher 25(OH)D concentration than was the use of none of these. However, none of the participants reached these intakes for all 3 factors.

Conclusion: Because few foods are vitamin D–fortified and the amounts of vitamin D in supplements are low, it is difficult to achieve adequate vitamin D status through increasing intakes in the Netherlands and in countries with similar policies.

Key Words: Vitamin D • food fortification • supplement use • body fatness • population-based study

This article has been cited by other articles:



Journal of Nutrition [▶ HOME](#)

H. Friis, N. Range, M. L. Pedersen, C. Molgaard, J. Changalucha, H. Krarup, P. Magnussen, C. Soborg, and A. B. Andersen
Hypovitaminosis D Is Common among Pulmonary Tuberculosis Patients in Tanzania but Is Not Explained by the Acute Phase Response

This Article

[Full Text](#)
[Full Text \(PDF\)](#)
[Purchase Article](#)
[View Shopping Cart](#)
[Alert me when this article is cited](#)
[Alert me if a correction is posted](#)
[Citation Map](#)

Services

[Similar articles in this journal](#)
[Similar articles in PubMed](#)
[Alert me to new issues of the journal](#)
[Download to citation manager](#)
[© Get Permissions](#)

Citing Articles

[Citing Articles via HighWire](#)
[Citing Articles via Google Scholar](#)

Google Scholar

[Articles by van Dam, R. M.](#)
[Articles by Lips, P.](#)
[Search for Related Content](#)

PubMed

[PubMed Citation](#)
[Articles by van Dam, R. M.](#)
[Articles by Lips, P.](#)

Agricola

[Articles by van Dam, R. M.](#)
[Articles by Lips, P.](#)

J. Nutr., December 1, 2008; 138(12): 2474 - 2480.
[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



Family Practice

► [HOME](#)

C. H Halsted
Perspectives on obesity and sweeteners, folic acid fortification and vitamin D requirements
Fam. Pract., September 30, 2008; (2008) cmn058v1.
[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



American Journal of EPIDEMIOLOGY

► [HOME](#)

R. Scragg and C. A. Camargo Jr.
Frequency of Leisure-Time Physical Activity and Serum 25-Hydroxyvitamin D Levels in the US Population: Results from the Third National Health and Nutrition Examination Survey
Am. J. Epidemiol., September 15, 2008; 168(6): 577 - 586.
[\[Abstract\]](#) [\[Full Text\]](#) [\[PDF\]](#)



BMJ

► [HOME](#)

J. L Sievenpiper, E. A McIntyre, M. Verrill, R. Quinton, and S. H S Pearce
Unrecognised severe vitamin D deficiency
BMJ, June 14, 2008; 336(7657): 1371 - 1374.
[\[Full Text\]](#) [\[PDF\]](#)

[HOME](#) [HELP](#) [FEEDBACK](#) [SUBSCRIPTIONS](#) [ARCHIVE](#) [SEARCH](#) [TABLE OF CONTENTS](#)

[Copyright © 2007 by The American Society for Nutrition](#)