

Reviewer's report

Title: Vitamin D deficiency was common among nursing home residents and associated with dementia: a cross sectional study of 545 Swedish nursing home residents

Version: 0 **Date:** 20 Aug 2017

Reviewer: William B. Grant

Reviewer's report:

Numbers. Some that would be better if revised:

line 49, 0.075 (0.031-0.18) as 0.08 (0.03-0.18)

line 50: 0.99 (0.96, 1.0) as 0.99 (0.96, 1.00) although that seem asymmetrical, i.e., should it be 0.99 (0.96-1.02)?

Line 52: $p < 0.029$ to 0.03

(also the same numbers in the text on p. 11 and in Table 2)

Regarding immune system, this recent paper might be cited:

Martineau AR, Jolliffe DA, Hooper RL, Greenberg L, Aloia JF, Bergman P, Dubnov-Raz G, Esposito S, Ganmaa D, Ginde AA, Goodall EC, Grant CC, Griffiths CJ, Janssens W, Laaksi I, Manaseki-Holland S, Mauger D, Murdoch DR, Neale R, Rees JR, Simpson S Jr, Stelmach I, Kumar GT, Urashima M, Camargo CA Jr. Vitamin D supplementation to prevent acute respiratory tract infections: systematic review and meta-analysis of individual participant data. *BMJ*. 2017 Feb 15;356:i6583.

regarding mortality rate:

Garland CF, Kim JJ, Mohr SB, Gorham ED, Grant WB, Giovannucci EL, Baggerly L, Hofflich H, Ramsdell J, Zeng K, Heaney RP. Meta-analysis of all-cause mortality according to serum 25-hydroxyvitamin D. *Am J Pub Health*. 2014 Aug;104(8):e43-50.

Cancer:

Grant WB, Boucher BJ. Randomized controlled trials of vitamin D and cancer incidence: A modeling study. *PLoS One*. 2017 May 1;12(5):e0176448.

Regarding 25(OH)D categories:

Holick MF, Binkley NC, Bischoff-Ferrari HA, Gordon CM, Hanley DA, Heaney RP, Murad MH, Weaver CM. Evaluation, treatment, and prevention of vitamin D deficiency: an Endocrine Society Clinical Practice Guideline. *J Clin Endocrinol Metab*, 2011 Jul;96(7):1911-30.

Line 125: what is the range of latitude?

Line 171 - what is the city for DiaSorin?

What is the precision and accuracy of the instrument?

What procedures were used to ensure accuracy?

Line 198: city for IBM??

Line 218: Vitamin D2 has different health effects than does vitamin D3. Can any more information be teased out of the data with respect to D2 and D3 supplementation? For example, antibiotic use?

Line 273: While antibiotics are useful for bacterial infections, they are also used inappropriately for viral infections.

Line 308: vitamin D does not have a capital V.

Table 2. Footnote 2 does not state what adjustments were made; however, Footnote 1 does.

Are the methods appropriate and well described?

If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?

If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?

If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?

If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

Quality of written English

Please indicate the quality of language in the manuscript:

Acceptable

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