Reviewer's report

Title: Assessment of vitamin D and its association with cardiovascular disease risk factors in an adult migrant population: An audit of patient records at a Community Health Centre in Kensington, Melbourne, Australia

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Reviewer: Robert RS Scragg

Reviewer's report:

The current manuscript reports results from a cross-sectional analysis of patients treated at a community medical centre in Melbourne, Australia. The approach by the authors is reasonably novel, in that they have posed four hypotheses related to vitamin D status, migration and risk of coronary heart disease, and tested them in three groups of patients from this clinic. The selection of the patients into the three study samples is clearly described in the Figure, the authors have drawn appropriate conclusions from their results. Their Discussion is a good overview of how their results align with previous research.

My main concern with the paper is the use of odds ratios as a measure of effect. In cross-sectional studies, these grossly over-estimate the true measure of effect, which is the prevalence ratio (or relative risk). For example, in Table 1, the unadjusted prevalence ratio of having a vitamin D test for migrants from Zone 1, compared with non-migrants, is 74.3% divided by 44.2% = 1.68, much less than the odds ratio of 3.65 in the table. If the authors are able to use log-binomial regression in SPSS, they will get the desired measure of effect, for both unadjusted and adjusted analyses. This will greatly assist readers in the interpretation of their results.

Minor essential revisions

1. Inclusion criteria (starting line 177): the authors should state the lower limit of their age range (for adults) so that it is clear to readers where this starts.
2. Page 10, migration zones 1, 2 and 3: why are the latitudes for Zone 1 not the same for North and South? I have checked reference 30, which is the basis for the categories, but can find nothing in Figure 1 of reference 30 to justify this decision. Can the authors please provide more information to justify the cut-points? Otherwise, they should be the same above and below the equator.
3. Framingham risk score (line 204): as this is a measure of cumulative incidence, the authors should state the time period for their scores. I assume this is 10-years, from Table 4, but this should be mentioned in the Methods.
4. Page 12, top paragraph: the authors should add-in the time period (? ten years) for the 15% CHD risk.
5. Results from Table 4: the null findings in this are not surprising given the small sample size. The authors should add this (low power and high probability of a
type 2 error) as a further limitation in the text under the section on ‘Strengths and Limitations’.

6. Table 1:
   a. The term ‘odds ratio’ should appear in the title of the table, so that the main results refer to odds ratios associated with have a vitamin D test. Although, please note my comment above about the preference for calculating prevalence ratios.
   b. Abbreviations (UOR and AOR) should have full-spelling footnoted in the table.
   c. Terms should be consistent: eg. ‘testing’ and ‘measured’ for vitamin D.

7. Table 2: same comment as for Table 1 about spelling abbreviations in a footnote. Also ‘UOD’ should be corrected to ‘UOR’.

8. Tables 3 and 4: full spelling of abbreviations footnoted.

9. Figure 1: abbreviation FRS should be spelt fully in the legend.

Discretionary revisions

10. Bottom of page 7: the authors mention recent studies (line 134) and then cite articles published in 2008 and 2007. More recent publications should be used so that the references are more current (eg. existing reference 43 could be mentioned here, as well as recent article on diabetes and blood pressure: Song Y, et al. Blood 25-hydroxy vitamin D levels and incident type 2 diabetes: a meta-analysis of prospective studies. Diabetes Care 2013;36:1422-8; Kunutsor SK, et al. Vitamin D and risk of future hypertension: meta-analysis of 283,537 participants. European Journal of Epidemiology 2013;28:205-21).

11. Lines 234-235: I suggest deleting the last sentence of this paragraph. The authors know nothing about the vitamin D status of their patients pre-migration, as this was not measured by them. They can make a statement about lower latitude pre-migration, but it is not the same as vitamin D status, which could have been low if they worked indoors before leaving their home countries.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**
'I declare that I have no competing interests'