Reviewer's report

Title: World-wide research architecture of vitamin D research: density-equalizing mapping studies and socio-economic analysis

Version: 0 Date: 10 Jul 2017

Reviewer: Kerry Jones

Reviewer's report:

This manuscript describes the use of a mapping technique to characterise vitamin D publication productivity globally.

The research question is probably of general interest to researchers in the field and the paper comprehensively conveys the global distribution of vitamin D research.

On the search terms:

Initially I thought the focus was on vitamin D as a nutrient in context of human health but a number of pharmaceutical/synthetic forms of vitamin D are included in the search terms. I think this should be better justified as it shifts the vitamin D research bias to countries that perform more of this type of work.

Were the results restricted to human studies?

The WoS categories chosen are extensive but could more general filtering be used, e.g. clinical? May studies of healthy patients been missed?

Was any further filtering of the search results performed?

Did the search include only full articles or were other sources included (meeting abstracts etc)?

Page 11/12. Vitamin D research areas. To what extent do the trends in categories represent trends in the use of the categories in all areas of science rather than reflecting shifting trends in vitamin D research areas?
Page 15/16 (paragraph on VD research following osteoporosis research). This may be true but is speculative. These countries also account for the highest overall medical research spend and therefore their vitamin D-related output may simply be reflective of their investment in research overall. This also applies to your comment on page 17 lines 16-18.

Minor

The last word of the abstract could be "encouraged" as we cannot enforce research in those areas.

Page 14. Line 10. Why are cancers particularly highlighted given the many health and disease areas associated with vitamin D. I have the same comment on page 15, lines 53-56.

Page 14. Line 58. There is a missing word in this sentence.

Page 15. Line 45. This highlights that Japan was 2nd overall and but had less than 300 articles on diabetes -however, without the Japan's ranking in this category it is difficult to place this in context of other countries.

Page 16. Line 41. Rather than citizens, it is population size.

Page 16. Lines 44-54. I am not sure of the relevance of these sentences.

Page 17. Line 13. 'extend' should be 'extent'

Page 17. Line 13. 'Gaps' rather than 'pitfalls'?

Table 1. I found this table quite difficult to follow - could the decimal places be reduced or in some cases removed? It also wasn't obvious how countries were ranked in the table - why did you choose articles / millions of population and if this parameter is used perhaps it could be shifted left in the table.

Figures. In my copy, the resolution of the figures was poor.
**Level of interest**
Please indicate how interesting you found the manuscript:

An article whose findings are important to those with closely related research interests

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

**Declaration of competing interests**
Please complete a declaration of competing interests, considering the following questions:

1. Have you in the past five years received reimbursements, fees, funding, or salary from an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

2. Do you hold any stocks or shares in an organisation that may in any way gain or lose financially from the publication of this manuscript, either now or in the future?

3. Do you hold or are you currently applying for any patents relating to the content of the manuscript?

4. Have you received reimbursements, fees, funding, or salary from an organization that holds or has applied for patents relating to the content of the manuscript?

5. Do you have any other financial competing interests?

6. Do you have any non-financial competing interests in relation to this paper?

If you can answer no to all of the above, write 'I declare that I have no competing interests' below. If your reply is yes to any, please give details below.

I declare that I have no competing interests

I agree to the open peer review policy of the journal. I understand that my name will be included on my report to the authors and, if the manuscript is accepted for publication, my named report including any attachments I upload will be posted on the website along with the authors' responses. I agree for my report to be made available under an Open Access Creative Commons CC-BY license (http://creativecommons.org/licenses/by/4.0/). I understand that any comments which I do not wish to be included in my named report can be included as confidential comments to the editors, which will not be published.

I agree to the open peer review policy of the journal