Reviewer's report

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

Version: 0 Date: 03 Jul 2017

Reviewer: Barbara Boucher

Reviewer's report:

Review of 'VitD-NutrJ.docx'
Synopsis. This study describes the analysis of the origins of the ~26,000 papers identified by a standard literature search engine, using density mapping, for different countries, finding greater outputs in countries with higher GDPs, greater output efficacy [papers/unit of GDP] in certain Scandinavian countries, and a dearth of reports from poorer countries, especially in South America, Africa and Asia, from which the authors conclude that vitamin D research "may need to be enforced in such countries".

General comments.

1. The analyses reported are of interest [and vividly displayed using DEMP] methodology, but of no surprise to anyone who has followed the vitamin D literature over the years; the vivid display of the findings may, however, alert low vitamin D research output countries to, at the least, carry out audits to check what degree of vitamin D deficiency/insufficiency their citizens may be suffering.

2. Since what is needed is a major effort, globally, to improve population vitamin D status where needed, probably by food fortification, which has been found to be effective in large proportions of the Finnish population since being introduced. This is urgent because the growing endemic problem of hypovitaminosis D is totally unacceptable, being avoidable through simple cost-effective measures without population testing, which would reduce the growing costs of ever more vitamin D research, [much of which is repetitive and adds nothing new to knowledge], and which would also reduce the costs of health care for the clinical problems caused by vitamin D inadequacy.

3. It would, therefore, be good to see the authors comment on the implications of the growing numbers of vitamin D papers, since even without knowing anything about their content, i.e., on the implication that the problem of vitamin D inadequacy is not being dealt with. Thus, it would be very useful to visualise the global problem of vitamin D...
inadequacy using the same analytical/display methodology, with maps for deficiency, insufficiency, and 'repletion', [based on reasonable cut offs ranges for 25(OH)D used in the papers quoted], globally, the countries without such data being shown as blank, either in white, or black [black spots?]. If that could be added to this report it would be useful, but if not, it would make a valuable further report.

4. The English language usage is hard to follow in places, and my specific comments are mainly directed at clarification in those areas.

Specific comments, by page and line numbers.

Page 3, abstract. Lines 13-15, you mention increases in different types of research on vitamin D here in the background, but do not pursue this in the study itself, though this would have been very interesting. Indeed, an increase in papers on how to correct vitamin D inadequacy with a fall in papers simply reporting the presence of hypovitaminosis D and its associations with disease would be a very encouraging trend. Thus, if that data cannot be provided in this report, perhaps it could be looked at in a further study, as suggested in general comment 3, above; lines 31-4, try '....while Northern America, including the USA, constitutes the major centre for production of vitamin D research, globally, followed by.....'; line, 47-9, is '...the global research architecture'. an appropriate phrase, try '... in global research production, or distribution.

Page 4, line 10, please qualify 'vitamin D' by adding status, provision, or something that explains what you are talking about; line 25, why say 'or' when these are additional associations; line 28, 'implications' is the wrong word - I think you mean 'considerations'; line 33, might 'ranging across' be more clear than 'bridging'; line 39, '.... the large numbers of existing ...'; and '.... their widespread implications.

Page 5, line 18, surely mapping implies visualization; line 21, this work began in 2008-9, ...; line 25/6, ..ranging from public health and ..... to .....'; lines 35-8, on relevant diseases and related areas of biomedical research; line 47, 'usually uses' is awkward, try 'commonly uses'?; line 52, try '...[21-23] we used this database in the present study. Line 54, omit the first 'the'

Page 6, lines 19-21, ..field to estimate [or to assess] the overall number of published reports; line 25 is repetitive, try 'The research was further refined as follows, by DOCUMENT TYPE and .....'

Page 7, line 39, if no other data lacking than citation rate, say, '...incomplete data on citation rates, results from .... 'line 51, '....diseases investigated with ...'
Page 8, lines 5-7, [25], used to visualize...line 12, ...separate territories (countries)...; line 53-4, 'Economic data...'? Line 56, [27], and countries were....

Page 9, line 10, '..found in the selected data bases'; line 15, '...there is a large gap to the next most active country, Japan, ...'; line 44, 'Three major rankings were defined using socio-...; line 51-2, '... 2174.9, with Israel second with a R of....., followed by....;

Page 10, line 42/3, omit the word 'the' before 'population size'.

Page 11, line 56, 'evolution over time was .....using the subject area as a proportion of ...'

Page 14, line 12/13 is rather confused, and confusing - do you mean '---yet no overall picture of vitamin D research activity has been developed.'; line 23, '...was initiated by experts from both the fields of vitamin D research and the field of ......'; lines 34/36, 'The present approach integrates the NewQIS study protocol [9], combining novel...with scientometrics.']; lines 46/50, '....and points to the fact that not all literature searches can be taken to cover the relevant areas of interest; line 51, .. 'in this respect, the language ....'; line 58, '...not included must be missed out.'

Page 15, line 4, '... database provider to this problem.'; line 9, 'This emphasis on ....regional publications...'; line 20, '....impact factors that are included...'; line 26, 'From the results of our ...; line 40, "......there were differences in both research areas'; line 40, I would omit the word 'present'; line 58, the first word, 'also', is not needed; line 60-61, 'to speculate on whether the global ....'

Page 16. Line 4, ...landscape, and there are parallels, as demonstrated ...'; line 27, omit the word 'the' and the word 'also'; line 36/7, '......relation of vitamin D research output to.....'; line 39, 'research output to.....'; line 39/41, '...and, .....3), .....in relation to citizen numbers [if that is what you mean]; line 42,' .......lead to different pictures of the distribution or research globally.; line 51-2, 'with a calculated ....'.

Page 17-8, line 8, the first analysis of the 'global architecture' of vitamin D research activity'; line 13, '... to a major extent, a number of weaknesses are present, for example, South ....'; line 18, remove the word 'the'; line 18, 'However, since vitamin D......is currently increasing in the Americas, ....'

Tables, these are hard to follow as they don't fit A4 pages very well, and I can't see what is in the columns properly. Each Table needs a number and a Legend explaining what it shows so that it can be understood without reference to the text.
Figure legends and Figures are hard to link to each other as the Figure numbering has not come through clearly in my print out.

Re legend to Fig 1, line 12, '... analyses of numbers of vitamin D articles....'; line 39, insights into the fields of activity.

There are 2 table 1s, please check,

There are no numbers that I can find for most of the figures showing the global distribution

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