Reviewer's report

Title: Vitamin D deficiency among Healthy Adolescents in Al Ain, United Arab Emirates

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Reviewer: Barbara J J Boucher

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Review- Vitamin D deficiency among healthy adolescents in Al Ain, United Arab Emirates - Muhairi et al.

General comments.

Necessary revisions include everything mentioned apart from those matters that are purely grammatical.

This study of school children in the UAE supports many other emerging studies of youngsters from hot and sunny countries that suggest that marked vitamin D deficiency present in this section of the community. This problem poses considerable risks for this community as it ages, with increased risks for osteoporosis and falls and resultant fractures with their high mortality and morbidity and for the many non-classic [non-bony] health problems associated with poor vitamin D status, world-wide. Thus, although the study adds little new information on the basis of vitamin D status and its effects it does high light the problem in an additional part of the world and add to knowledge on a global problem that urgently needs to be solved. The study is clearly described, the findings are clearly and simply presented and the MS is easy to follow though some points do need attention. For example, serum 25(OH)D measurements are ‘concentrations’ and this term should be used throughout rather than ‘levels’ when talking about assays and assay data,’ though ‘levels’ is appropriate when discussing cut-offs. It is unclear whether smoking was noted in this study. If young people do smoke in the UAE this data might affect the metabolic syndrome related variables so that a comment on this would be useful. In mentioning milk and dairy intakes it would be helpful to be told how much vitamin D there is in such products in the UAE. It is important to state whether or not there was any seasonal variation in serum 25(OH)D in boys or girls, [more likely in males and more likely not to be found in females] as this finding would mean that associations of D status with the outcomes used would need adjustment for season of sampling.

Specific comments.

There are some clarifications that would be useful to the reader as listed below. Some editing of the English text would improve the presentation in general and a few examples are included in these specific comments.

Page 1, Background, ..in adult populations, there are few data on ....
Page 2. Methods, Line 1. This was…. Line 2. Are there 142 relevant schools in total in Al Ain; if so, say ‘…selected from the 142 schools… Line 3. Outcomes measured… Results, line 2, using a cutoff level of 25(OH)D of <20 ng/ml [<50nmol/l], …line 4, concentrations, not levels. Conclusions, ..prevalent in adolescents, and more common in girls.

INTRODUCTION Line1-2 low serum concentrations of 25- etc ‘. Line 5, , insert ‘especially since’ before and peak bone mass? Last line, insert deficiency after vitamin D. page 3. Line 1, is it many or some? Deficiency remains a problem globally, you might like to quote Prentice A or Calvo M on that? Para 2, line 9, insert ,therefore, after the aims of this study?

Page 4. Did the latitude of schools vary much? If so this should be mentioned and adjusted for. Line 2 change blood 25(OH)D levels to serum 25(OH)D concentrations. Data collection Was there information on smoking which may have affected results, as above. Was there information on the use of sunscreen or was this never used, please mention this as it could have affected 25(OH)D findings.

Page 5. Blood tests -were these done within any specific time range that should be mentioned? The same query applies to measurements of height and weight since both vary with time of day. Was BP taken after a certain time after exercise or smoking [if anyone was a smoker]?

Page 6. Line 1, .diagnostic criteria for MetS…; Para 2, line 1, concentrations not levels, Statistical analyses. Were all data normally distributed. If not, then such data needs to be described by medians and analyzed using non-parametric tests; please check and adjust this section if necessary. Line 8, concentrations not levels.

Results. Page 7, line 5 could better start with the characteristics….. Para 2, line 1, concentration not levels, as is also needed in more places lower down; line 2, ‘using a cutoff of ….’;

Page 8, note the many places where levels should read concentrations; on the last line you could say vitamin D status instead. At the end of the results, some results of multiple regression analyses of the determinants of the cardiovascular outcomes measured, saying where D status proved to be an independent predictor, and where it did not, would be useful, especially for HDL-C,since simple variance suggested higher D status was linked to lower HDL-C rather than to higher HDL-C which is the more usual finding.

Discussion. Page 8. Line 2 – our school-based study ….’ line 4, than did their male …..; line 5, are available rather than were available; Para 2, commas needed around ,particularly in females,.; line 2, the face and hands….; line 7, low vitamin D status; last line, re ‘enough milk’ - this only applies if UAE milk contains a lot of vitamin D so please review this section; third Para, line 2, …lipids or metabolic syndrome…..; line 3 and also line 8, say ‘ 25(OH)D concentrations’ and not ‘vitamin D’ as this wasn’t
measured. Otherwise you will need to define 25(OH)D that way at the start! Last but one line, would start better as ‘Other studies have shown……

Page 10. Para 1, Line 2, ‘…. to measure serum parathyroid……… a measure of bone health, loosely associated with vitamin D status [and a relevant reference]. line 4, with its inherent limitations…. In conclusion, this section should stand alone and provide enough detail for readers of the summary to know what was done and what was shown; thus, line 2 needs to include ‘…in females in the United Arab Emirates. You also need to say something to justify choosing food fortification and sun exposure rather than supplementation, either here or in a short Para at the end of the Discussion, since how to deal with this problem is not discussed there.

Tables and the Figure. , ‘concentrations’ is the more correct term to use than ‘levels’.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

i have no competing interests to declare