Reviewer’s report

Title: Skin pigmentation, sun exposure and vitamin D levels in children of the Avon Longitudinal Study of Parents and Children

Version: 1 Date: 12 December 2013

Reviewer: Michael Holick

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1. Was there a seasonal variation in the blood level of 25-hydroxyvitamin D? Since this study was performed in the UK almost 6 months of the year very little vitamin D is produced in the skin and therefore the results could be significantly diluted by seasonal effect especially as it relates to sun exposure and sunscreen use.

2. As the authors are probably aware both children and adults do not apply the amount of sunscreen required to obtain the sun blocking effect of the sunscreen. Do the authors have any information about this? This should at least be included in the discussion and a possible weakness in the conclusion regarding sunscreen use and vitamin D status.

3. In the conclusion in the abstract the statement protective measures against sunburn and skin cancer does not seem to impair vitamin D production should be qualified. It makes little sense that taking protective measures against sunburn and skin cancer that there is no effect on vitamin D production. Presumably sun protection means preventing UVB from entering into the epidermis. By doing so by definition vitamin D production would be reduced. There is significant literature on this subject that the authors failed to acknowledge. Do the authors have any information that the so-called protective measures were actually protective?

4. It is unclear how meaningful the information is regarding the holidays near the sea or abroad. For example in the winter exposure to sunlight on a sunny beach in Spain will still not result in any significant vitamin D production because of the latitude.

5. It is unclear on page 5 what is meant by excess sun protection measures since as noted in #2 often sunscreen use is not appropriately used even if the participant states that they used sun protection. This should be at least qualified.

6. The authors use a term vitamin D levels when they mean 25-hydroxyvitamin D levels. This should be corrected throughout the manuscript.

7. The authors report serum 25-hydroxyvitamin D levels to 2 decimal places. The assay is not that sensitive.

Level of interest: An article of importance in its field
Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

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