Reviewer's report

Title: High prevalence of vitamin D insufficiency and its association with cardio-metabolic risk factors among Malay adults in Kuala Lumpur, Malaysia

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Reviewer: Zalilah Mohd Shariff

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Title: High prevalence of vitamin D insufficiency and its association with cardio-metabolic risk factors among Malay adults in Kuala Lumpur, Malaysia

Date: 27th April 2011

General comment:
The manuscript describes the association between vitamin D status and cardio-metabolic risk factors among a convenient sample of 380 urban Malay male and female subjects. The manuscript is well-written, easy to read and the study findings could contribute to the existing literature. However, this study offers little new information to what we already know except that the study findings are ‘new’ (in terms of vitamin D status especially among males and its association with cardio-metabolic risk factors) to the Malaysian setting. Below are several major essential revisions that should be addressed by the authors:

Specific comments:
1. Introduction
a. General health status of Malaysians (from national surveys, preferably) that include metabolic risk factors should be included, particularly highlighting their possible relationship (if any published information on this relationship is available) to vitamin D status
b. The statement ‘However, the vitamin D status of the population especially the healthy and free living adults is not known’ is not true as there are several studies on vitamin D status among Malaysian adults (as discussed in ‘Discussion’) and children. Perhaps, the authors may want to describe these studies briefly in this section and highlight that they are not specific to cardio-metabolic risk factors
c. The authors may want to be specific on the claim that there are no particular specific health programs on vitamin D status in Malaysia – are the authors referring to fortification of foods with vitamin D? Vitamin D supplementation for specific groups? Or even the availability of natural food sources of vitamin D? What are the current standing of these strategies in Malaysia?

2. Methods
a. Provide brief but essential information related to study design and sampling procedures.

i. The subjects were recruited from a health screening, however it was not clearly stated as when the subjects were requested to provide the blood for biochemical parameters – was it done at a different time?

ii. The study actually used a convenient sample (which is not specifically mentioned) but the authors did not state the inclusion and exclusion criteria for subject selection e.g. non-breast-feeding and non-pregnant? Age group – what was the age range of subjects? Diagnosed with bone disease (e.g. osteoporosis, osteomalacia or fractures) or chronic diseases? Did the study include subjects on antihypertensive drugs or with diabetes (see page 7)? Inclusion of subjects with these conditions could very well influence the study findings.

b. The authors should also include cut-off (and present the data too) for ‘deficient vitamin D status’ (e.g. < 17.5 nmol/L) and analysis of fasting blood glucose

c. Were the data tested for normality or interactions (e.g. sex and age) that could lead the data to be analyzed differently (e.g. use of non-parametric test or stratify the analyses between vitamin D and risk factors by sex or age if there is such an interaction)?

3. Results and Discussion

a. Table 1

i. Provide the description of all variables in the study especially related to the metabolic risk factors. The authors may want to present the data on risk factors as in categories of ‘normal’ and ‘at risk’

ii. Are the diabetes mellitus and hypertensive based on self-reported data? If the DM is based on the fasting blood glucose (conducted in the study), then it should be stated as that and not DM (as this would require additional test for confirmation). How many of these subjects have been diagnosed with hypertension (and on medication) and DM? How would these subjects’ vitamin D status differ from those not diagnosed with these conditions (although they might have the risk factors as diagnosed in this study)? Did the authors make provision to analyze these groups separately from the main group?

iii. Present also the percentage of subjects who are deficient in vitamin D status as well as mean vitamin D separately for males and females

iv. The authors are suggested to present the data (especially cardio-metabolic risk factors) by sex (males and females)

b. Could the reason why females have lower vitamin D than males be due to more females were overweight and obese? This perhaps would require further statistical analyses for confirmation besides just attributing to clothing, sun exposure etc.

c. The authors stated that in the sample, age was negatively associated with vitamin D levels with older subjects had higher vitamin D. Is this finding based on t-test (Table 2) as it certainly is not reflected in the logistic regression? The t-test
showed a significant difference in age between vitamin D sufficient and insufficient groups but the means for both groups were lower than 50. It is also not convincing to provide the reason that younger Malaysians avoid exposure to sun more so than older adults as if this is a working urban sample (20 – 58 years old), they might not differ much in terms of sun exposure (unless the authors captured the data on the types of employment). It could also be the other way round in that the older people might be the ones who avoid sun exposure that the younger ones.

d. Limitations –

i. Page 16 on the statement ‘this study remains as one …… for both healthy males and females in Malaysia’ – this statement is not appropriate if the study included those already been diagnosed with DM and hypertension

ii. The study is not able to establish that low vitamin D status causes the subjects to exhibit these risk factors (as indicated by the logistic regression) as it is also possible that having these risk factors (e.g being overweight and obese) could predispose the subjects to having low vitamin D.

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

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

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