Author's response to reviews

Title: Does vitamin D3 play a significant role in type 2 diabetes?

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To,
Professor Timothy Shipley
Senior Executive Editor
BMC Endocrine Disorders
BioMed Central
236 Gray’s Inn Road
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Sub: Manuscript submission

Dear Prof. Timothy Shipley,

This communication is in regard to the manuscript entitled, “Does vitamin D3 play a significant role in type 2 diabetes?” having MS-ID 1763111112147570 was recently submitted to your esteemed journal “BMC Endocrine Disorders”.

There were suggestions need to be incorporated in the discussion section of the manuscript before processing further. We therefore have made the following changes in compliance.

1. Earlier Text: India being a vast tropical country geographically spreading from 8.4º N latitude to 37.6º N latitude, majority of its population receives sufficient sunlight throughout the year. [13,17,18]

   Changes incorporated: India being a vast tropical country geographically spreading from 8.4º N latitude to 37.6º N latitude, it is expected that sufficient sunlight is received throughout the year. [13,17,18]

2. Earlier Text: Lo et al. reported that Asian Indians require twice the sun exposure to produce sufficient quantity of vitamin D levels as compared to Caucasians due to increased skin pigmentation. [19] Harinanyan et al. demonstrated that an UV index of 7-9% leads to the conversion of 7-dehydrocholesterol to pre-vitamin D3 with maximum absorption between 11 am to 2 pm of the day. But due to very hot summers in India, most of the people stay indoors during this time, consequently resulting in low exposure to sunlight which seems to be one of the contributing factor for very low vitamin D3 status in our population. [17]

   Changes incorporated: It has been argued by Lo et al. that to meet an adequate requirement of vitamin D, people in India require sun exposure almost double than Caucasians due to increased skin pigmentation. [19] Life style factors like in-door working or working in close environment with minimum sun exposure is also likely for high prevalence of vitamin D deficiency in our population. Normal office hours in India are usually from 11 am to 7 pm while maximum sun exposure and absorption is between 11 am to 2 pm with an UV index of 7-9% required for conversion of 7-dehydrocholesterol to pre-vitamin D3. [17] But this seems to be unrealistic as being a tropical country summers in India are very hot, forcing most of its people to stay indoor during this time. This results in low exposure to the sunlight contributing for very low vitamin D3 status in our population.

3. Earlier Text: Our results differs from the data of other observational studies, which illustrates a consistent inverse association between vitamin D level or vitamin D intake on the incidence of T2DM. [3,4]

   Though, our observation is consistent with the New Zealand study of 250 overweight and obese adults’ aged 18 years; where investigators observed a weak, inverse relation between A1c and vitamin D3...
levels.[23] A study of 7,198 British Caucasians also showed a nonlinear inverse relationship between vitamin D and A1c.[24]

Vitamin D is thought to have both direct (by the activation of the vitamin D receptor) and indirect (by the regulation of calcium homeostasis) effects on various mechanisms linked to the pathophysiology of T2DM, involving impaired pancreatic-β cell function and insulin resistance.[10] A number of in vitro studies suggested that vitamin D plays a role in improving insulin sensitivity and secretion[10,16,23] however, the associations between 25(OH)D, glucose homeostasis, and insulin resistance in humans have been inconsistent.[25]

• Changes incorporated: Several mechanisms like activation of vitamin D receptor and calcium homeostasis involving impaired pancreatic-β cell function and insulin resistance in T2DM have been suggested.[10] This has been confirmed by in vitro studies in animal models suggesting its role in improving insulin sensitivity and secretion,[10,16,23] though the associations between 25(OH)D, glucose homeostasis, and insulin resistance in humans seems to be inconsistent.[23] Also a number of studies have shown a consistent inverse association between vitamin D level or vitamin D intake on the incidence of T2DM,[3,4] but our study could not demonstrate such relationship. Similar observation has been made in studies from New Zealand overweight adult population and British Caucasians demonstrating a weak relationship between A1c and vitamin D₃ levels.[24,25]

4. Earlier Text: Furthermore, in a review by Pittas et al. it was shown at least in seven trials that vitamin D supplementation has no role on glycemic measures [fasting plasma glucose, HbA1c and HOMA-IR (as indicator of insulin resistance)] in participants with normal glucose tolerance.[27]

• Changes incorporated: Furthermore, in a review by Pittas et al. it was shown at least in seven trials that vitamin D supplementation has no role on glycemic measures and HOMA-IR (as an indicator of insulin resistance) in participants with normal glucose tolerance.[27]

5. Reference list and citations in the text have also been changed accordingly.

We are now submitting the revised manuscript file as suggested. I apologize for the inconvenience. May I request you to look into the matter as quickly as possible and oblige?

Thanking you,

Yours sincerely,

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