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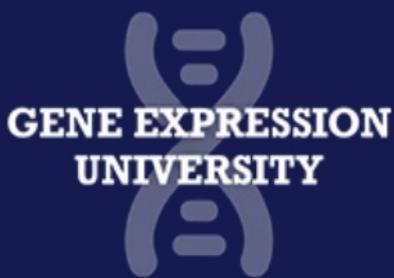**Register here**

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Vitamin D status may indeed be a prognosticator for morbidity and mortality in patients with COVID-19

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TO THE EDITOR:

We read with interest the systemic review and meta-analysis by Munchi et al. [1] of emerging evidence that vitamin D deficiency is associated with poorer outcomes and prognosis in patients with COVID-19 and would like to report our experience in the United Kingdom (UK). We recently conducted a prospective cohort study to assess the importance of vitamin D (25-OH-D) deficiency in older patients with COVID-19 [2]. Our significant findings were that patients with low concentrations of 25OH-D (≤30nmol/l) demonstrated clinically relevant, elevated markers of cytokine release syndrome and were more likely to become hypoxic and require ventilatory support. Although our study was underpowered to detect a mortality difference between deficient and replete groups, our data support that vitamin D status may be a surrogate prognosticator for morbidity and mortality in patients with COVID-19.

It is established that there is a complex interplay between vitamin D and various components of the innate and adaptive immune responses to both bacterial and viral infections. Alongside it's anti-inflammatory properties, vitamin D provides a protective role for alveolar epithelial and endothelial cells and reduces vascular permeability. In addition, vitamin D enhances ACE-2 expression which is actually favourable against acute lung injury [3]. Whether the link between vitamin D deficiency and requirement of ventilatory support observed in our cohort represents a causal relationship is unclear. However, disruption of one or more of these defensive pathophysiological processes may explain the association.

Mortality and hospitalisation rates for COVID-19 appear higher in northern latitude countries compared to those closer to the equator [4] and this supports an interrelation between vitamin D deficiency and adverse prognosis. For special consideration are older adults, particularly those who are institutionalised, who are inherently

vulnerable to vitamin D insufficiency because of inadequate sun exposure and dietary imbalance and may have worse outcomes with COVID-19. In the UK, there is also growing concern that the Black, Asian and Minority Ethnic (BAME) community are more susceptible to severe presentations of COVID-19 as a result of higher skin melanin content and reduced synthesis of vitamin D.

Regardless of the aetiology, vitamin D deficiency is readably diagnosable and correctable. On the basis of this reasoning and pending results of trials evaluating vitamin D supplementation and appropriate dosing within the context of COVID-19, efforts to manage vitamin D deficiency should be encouraged.

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