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Letter to the Editor

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Vitamin D, Immunity and COVID-19 in Malaysia

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The latest national and global health crisis is the ongoing outbreak of the infectious respiratory disease that was named as coronavirus disease (COVID-19) in December 2019 *[1]*. The COVID-19 outbreak has affected almost all crucial sectors such as health, travel, education and economy not only in the developing countries but also in the developed countries. When this article was getting prepared, over 28 million cases and over 900,000 deaths were reported globally *[2]*. In Malaysia, a total of 9868 patients and 128 deaths were recorded until September 14th, 2020 *[2]*. Although the COVID-19 incidence is showing a reducing trend in Malaysia, the incidence is dramatically increasing every day in some other countries.

Recently, there was a lot of attention to research and policies with regards to overnutrition and non-communicable disease (NCD's). The role of emerging and re-emerging infectious disease was not generally associated with overnutrition issues, particularly obesity. Interestingly, COVID-19 has shown a unique pattern of a fatality in which obese individuals were found to have a poorer survival rate *[3]*. From a treatment point of view, it could be explained that COVID-19 damages the respiratory system, thus obese individual survival odds are reduced due to pre-existing breathing weakness and poor responding to treatment procedures due to the presence of co-morbidities such as diabetes, hypertension and cardiovascular problems *[4]*. From a nutritional point of view, obesity is an outcome of chronic unhealthy dietary intake and lack of physical activity which may impair the development of a strong immune system. During an outbreak, good nutrition and a healthy lifestyle are extremely important. Having a healthy body weight and consuming a balanced diet are essential elements for supporting the immune system that may limit the severity of illnesses in infected people. Eating according to the quarter-quarter half-plate concept as recommended by the Ministry of Health of Malaysia ensures the intake of adequate amounts of energy, protein and antioxidant-rich nutrients that helps in developing a good immune system. This paper is another initiative to highlight the importance of researching nutrition and immunity, which is not extensively explored in Malaysia. Numerous publications have reported that compared to individuals with normal weight, obese individuals have a lower level of serum vitamin D *[5]* which is vital for enhancing host immune response. Hence, this article will discuss some important points related to vitamin D, immunity and COVID-19.

On top of muscular and skeletal health, vitamin D is reported to help in boosting the immune system via several mechanisms *[6]*. With regards to a viral infection such as COVID-19, vitamin D

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enhances cellular immunity by reducing the cytokine storm by decreasing the expression of pro-inflammatory cytokines and increasing the expression of anti-inflammatory cytokines. The Irish Longitudinal Study on Ageing (TILDA) reported findings on the role of vitamin D in preventing respiratory system infections, reducing antibiotic use, and boosting the immune system response to infections particularly in older adults *[7]*. An expert group in Europe indicated older age as one of mortality risk from COVID-19, especially in developing countries *[8]*. A meta-analysis of individual participant data from 10933 participants in 25 randomised controlled trials showed an overall protective effect of vitamin D supplementation against acute respiratory tract infection particularly among individuals with profound vitamin D deficiency at baseline *[9]*. Unfortunately, vitamin D or the sunshine vitamin is surprisingly lacking in the majority of Malaysians across all age groups *[10, 11]*. It is mainly due to limited intake of vitamin-D-rich food sources in this region and due to sunray avoidance behavior *[12]*. Furthermore, obesity exacerbates deficiency as fat-soluble vitamin D is sequestered and stored in adipose tissue instead of blood circulation *[5]*.

COVID-19 is a wakeup call for everyone to rethink about the importance of ensuring adequate intake of vitamin D in their daily diet and the importance of maintaining healthy body weight. Besides, it reminds the researchers to explore this topic more as data and publications are lacking in Malaysia and all around the world.

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Conflict of Interest

The author does not have any conflict of interest.

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