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Review

Role of vitamin D in preventing of COVID-19 infection, progression and severity



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ABSTRACT

The outbreak of COVID-19 has created a global public health crisis. Little is known about the protective factors of this infection. Therefore, preventive health measures that can reduce the risk of infection, progression and severity are desperately needed. This review discussed the possible roles of vitamin D in reducing the risk of COVID-19 and other acute respiratory tract infections and severity. Moreover, this study determined the correlation of vitamin D levels with COVID-19 cases and deaths in 20 European countries as of 20 May 2020. A significant negative correlation ($p = 0.033$) has been observed between mean vitamin D levels and COVID-19 cases per one million population in European countries. However, the correlation of vitamin D with COVID-19 deaths of these countries was not significant. Some retrospective studies demonstrated a correlation between vitamin D status and COVID-19 severity and mortality, while other studies did not find the correlation when confounding variables are adjusted. Several studies demonstrated the role of vitamin D in reducing the risk of acute viral respiratory tract infections and pneumonia. These include direct inhibition with viral replication or with anti-inflammatory or immunomodulatory ways. In the meta-analysis, vitamin D supplementation has been shown as safe and effective against acute respiratory tract infections. Thus, people who are at higher risk of vitamin D deficiency during this global pandemic should consider taking vitamin D supplements to maintain the circulating 25(OH)D in the optimal levels (75–125 nmol/L). In conclusion, there is not enough evidence on the association between vitamin D levels and COVID-19 severity and mortality. Therefore, randomized control trials and cohort studies are necessary to test this hypothesis.

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