COVID-19 and Vitamin D (Co-VIVID Study): A meta-analysis of randomized controlled trials

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Background: Vitamin D levels have been reported to be associated with COVID-19 susceptibility, severity and mortality events. We performed a meta-analysis of randomized controlled trials (RCTs) to evaluate the use of vitamin D intervention on COVID-19 outcomes.

Methods: Literature search was conducted using PubMed, Cochrane library, and ClinicalTrials.gov databases (latest search on August 5, 2021). We included RCTs reporting the use of vitamin D intervention to control/placebo group in COVID-19. Two independent researchers did literature search, abstracted data, and the risk of bias assessment.

Results: A total of 6 RCTs with 551 COVID-19 patients were included. The overall collective evidence pooling all the outcomes across all RCTs indicated the beneficial use of vitamin D intervention in COVID-19 (relative risk, RR = 0.60, 95% CI 0.40 to 0.92, Z=2.33, p=0.02, I2 = 48%). However, no statistical significance was observed for individual outcomes of ICU care (RR = 0.11, 95% CI 0.15 to 1.30, Z=1.48, p=0.14, I2 = 66%) and mortality (RR = 0.78, 95% CI 0.25 to 2.40, Z=0.66, p=0.02, I2 = 33%), though decreased rates were noted. The rates of RT-CR positivity was significantly decreased in the intervention group as compared to the non-vitamin D groups (RR = 0.46, 95% CI 0.24 to 0.89, Z=2.31, p=0.02, I2 = 0%).

Conclusion: COVID-19 patients supplemented with vitamin D are more likely to demonstrate fewer rates of ICU admission, mortality events and RT-PCR positivity. Completion of ongoing trials is largely needed to precisely establish the association between vitamin D use and COVID-19 mortality.

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