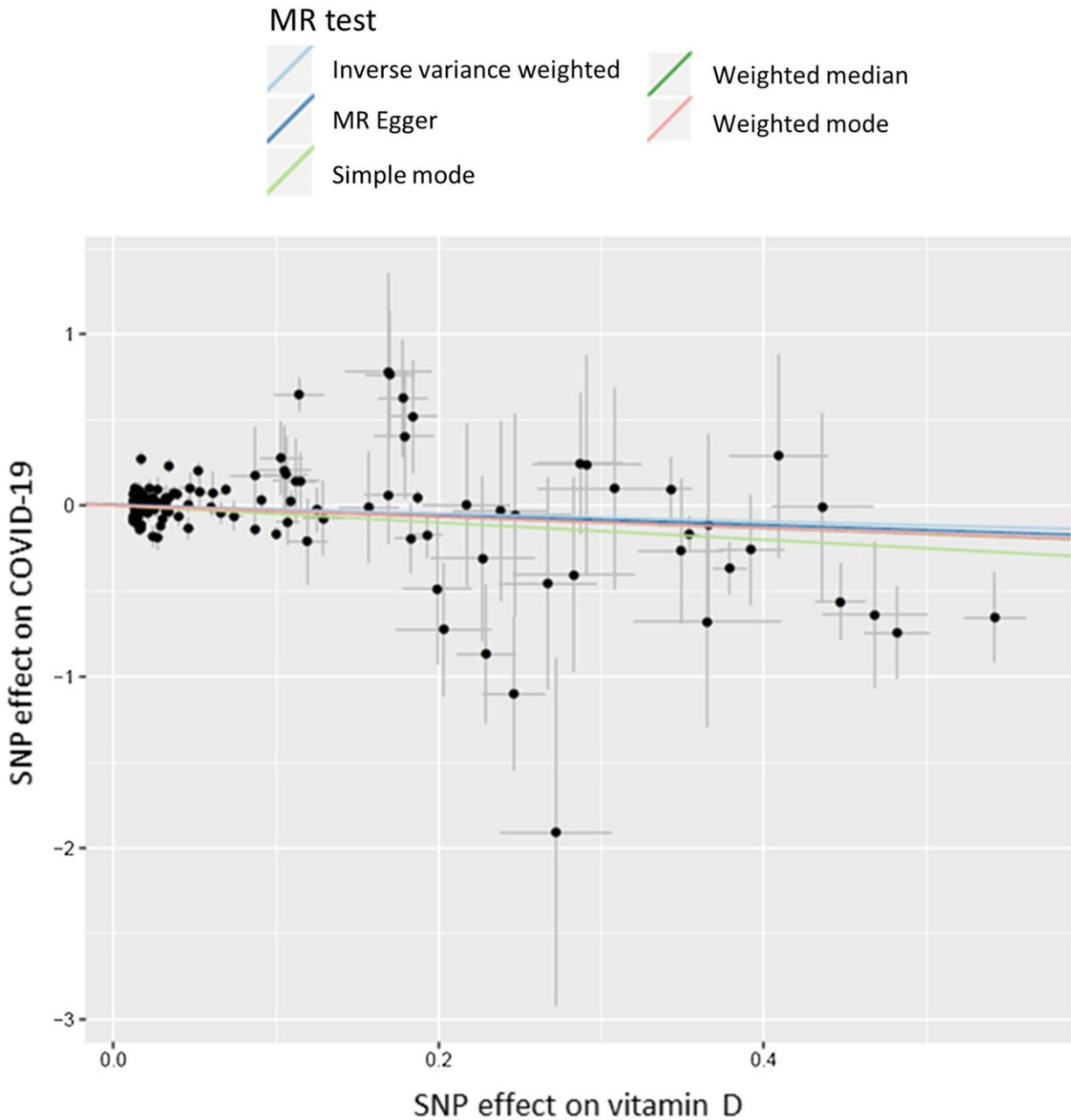


Further evidence that vitamin D might protect against severe COVID-19 disease and death

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A scatter plot of Mendelian Randomisation analyses of 134 vitamin D SNPs on COVID-19 risk. Credit: DOI: 10.1038/s41598-021-97679-5

New research from Trinity College and University of Edinburgh has examined the association between vitamin D and COVID-19, and found

that ambient ultraviolet B (UVB) radiation (which is key for vitamin D production in the skin) at an individual's place of residence in the weeks before COVID-19 infection, was strongly protective against severe disease and death.

The paper has been published in the journal *Scientific Reports*.

Previous studies have linked [vitamin D](#) deficiency with an increased susceptibility to viral and bacterial respiratory infections. Similarly, several [observational studies](#) found a strong correlation between vitamin D deficiency and COVID-19, but it could be that these effects are confounded and in fact a result of other factors, such as obesity, older age or chronic illness which are also linked with low vitamin D.

To overcome this, researchers were able to calculate "genetically-predicted" vitamin D level, that is not confounded by other demographic, health and lifestyle factors, by using the information from over one hundred genes that determine vitamin D status.

The Mendelian Randomisation is a particular analytical approach that enabled researchers to investigate whether vitamin D and COVID-19 might be causally linked using genetic data. Few earlier studies attempted this but failed to show a [causal link](#). This could be because UVB radiation sunshine which is the most important source of vitamin D for majority of people was ignored.

What is unique about this research?

Researchers, for the first time, looked at both genetically-predicted and UVB-predicted vitamin D level. Almost half a million individuals in the UK took part in the study, and ambient UVB radiation before COVID-19 infection was individually assessed for each participant. When comparing the two variables, researchers found that correlation

with measured vitamin D concentration in the circulation was three-fold stronger for UVB-predicted vitamin D level, compared to genetically-predicted.

What were the findings?

Researchers found that ambient UVB radiation at an individual's place of residence preceding COVID-19 infection was strongly and inversely associated with hospitalization and death. This suggests that vitamin D may protect against severe COVID-19 disease and death. Additionally, while the results from the Mendelian Randomisation analysis weren't conclusive, some indication of a potential causal effect was noted. Because of the relatively weak link between genetically-predicted vitamin D level that is used for Mendelian Randomisation analysis, it is possible that the number of cases in the current study was too small to convincingly determine causal effect, but future larger studies might provide the answer.

Professor Lina Zgaga, associate professor in epidemiology, School of Medicine, Trinity College and senior researcher on the study said:

"Our study adds further evidence that vitamin D might protect against severe COVID-19 infection. Conducting a properly designed COVID-19 randomized controlled trial of vitamin D supplementation is critical. Until then, given that vitamin D supplements are safe and cheap, it is definitely advisable to take supplements and protect against vitamin D deficiency, particularly with winter on the horizon."

Professor Evropi Theodoratou, professor of cancer epidemiology and global health, University of Edinburgh and senior researcher on the study said:

"Given the lack of highly effective therapies against COVID-19, we

think it is important to remain open-minded to emerging results from rigorously conducted studies of vitamin D."

Dr. Xue Li, a researcher on the study from Zhejiang University said:

"Our study supports the recommendation of vitamin D supplementation for not only the maintenance of bone and muscle health during the lock down, but also the potential benefits in relation to protection from COVID-19."

More information: Xue Li et al, An observational and Mendelian randomisation study on vitamin D and COVID-19 risk in UK Biobank, *Scientific Reports* (2021). [DOI: 10.1038/s41598-021-97679-5](https://doi.org/10.1038/s41598-021-97679-5)

Provided by Trinity College Dublin

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