

# Vitamin-D for Depression

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## Key points

- Relationship between vitamin D and mental health
- Results of studies exploring effects of supplements on depression
- Contradictory statements to these results
- Importance of vitamin D supplements

Mood disorders, such as depression, can adversely affect a person's health and lifestyle. Unfortunately, the number of people suffering from these disorders have been gradually increasing, hence why there is a need for a better understanding of potential treatments. The impact of nutrition on mental health has been a topic of great interest for epidemiological research and intervention studies in the past few years.<sup>1</sup>

### Hypothesis

Various reports discuss the possible link between vitamin D deficiencies and depression. Although vitamin D levels cannot be proven as a direct cause of depression, in many of the studies so far, vitamin D levels have shown a clear inverse relationship with the symptoms of depression. For instance, in his review of dietary supplements and their effects on mental illnesses, Hoffman indicated that vitamin D supplementation was able to abate the symptoms of this disorder.<sup>2</sup>

Vitamin D Receptors (VDRs) are located on the cell membranes of many tissues, including such areas of the brain that play a part in the physiology of neuropsychiatric diseases, such as the prefrontal cortex, hippocampus, cingulate gyrus, thalamus, hypothalamus, and substantia nigra. This presents a possible link between vitamin D levels and mental disorders.<sup>3</sup>

### Review

In one study, the vitamin D levels of 200 subjects was discerned. It was noted that the vitamin D levels of 100 healthy individuals was within normal range, whereas that of 100 depressed individuals, screened on the Beck Depression Inventory (BDI) scale, was below normal.<sup>4</sup>

In another meta-analysis study of relevant literature, it was detailed that taking vitamin D supplements at 2000 IU/day–50,000 IU/week for 2 to 24 months showed a reduction in depressive symptoms. While it is possible, and common, to prescribe anti-depressants for this cause, the additive effect of these drugs proves to be a very real complication.<sup>5</sup>

### Contradictions

It is also believed that low serotonin levels, as a consequence of low plasma tryptophan levels due to a vitamin D deficiency, can lead to depression.<sup>5</sup>

However, it is worth considering that while the serotonin theory of depression has been around for a very long time, it has also been suggested that there is no credible evidence in favor of it.<sup>6</sup>

It is also worth mentioning that a reverse causality between vitamin D levels and mental illnesses has been proposed, where individuals suffering from depression may lose appetite and

prefer to remain indoors, failing to meet their minimum vitamin requirements. That, coupled with the body's increased need for vitamin D due to the disruption in calcium homeostasis seen in those with mental health problems, their overall vitamin D levels may fall.<sup>7</sup>

### Conclusion

There have still been a considerable number of meta-analyses that have established that scarcity of vitamin D is heavily associated with depression, and Vitamin D supplementation can alleviate negative emotions and markedly lower the intensity of the symptoms of depression, including irritability, fatigue, and mood swings.<sup>7</sup>

### References

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