

Vitamin D and its role in sleep physiology

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25-hydroxy vitamin D (25(OH)D) is a fat-soluble vitamin that plays an important role in mineral and bone metabolism. Apart from its role in calcium absorption, 25(OH)D has been found to be associated with several other physiological mechanisms including sleep.¹ An increasing number of studies report an association between 25(OH)D levels and sleep physiology where the vitamin's deficiency has been linked to shorter sleep duration and lower sleep quality.^{2,3}

A clinical trial performed in 2017 by Majid et al, took into account 89 participants between 20-50 years of age and assessed their sleep quality using the Petersburg's sleep index. Forty four of these participants were given regular vitamin D supplements for eight weeks. The rest of the population received placebo. The results showed improvements in sleep quality, and increased sleep duration in the population treated with 25(OH)D supplements.²

Another recent study conducted on 657 participants in Sao Paulo, Brazil highlighted the association of 25(OH)D deficiency with Obstructive Sleep Apnea (OSA) where polysomnography revealed an association of OSA and short sleep duration with the risk of serum 25(OH)D deficiency in 59.5% participants ≥ 50 years.¹

A possible explanation for this new correlation suggests

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that inadequate levels of 25(OH)D might lead to sleep impairment due to an increase in pro-inflammatory mediators, such as tumour necrosis factor alpha, interleukin-1 and prostaglandin D2.³

Local literature shows a high prevalence of 25(OH)D deficiency in Pakistan (53.5%)⁴ and sleep deprivation is also reported as a common problem in the general population.⁵ Hence, this newly established correlation is important to realize in patients presenting with sleep disorders and may play a major role in managing them successfully.

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