

# Impact of the COVID-19 pandemic on vitamin D status in adults

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## Abstract

To investigate the impact of the COVID-19 pandemic on vitamin D status among adults. A total of 1525 adults from Henan Provincial People's Hospital were included. The results revealed a significant difference in overall 25-hydroxyvitamin D (25(OH)D) levels between 2022 (18.14, 13.78, 23.68) and 2023 (19.15, 14.88, 25.01,  $p=0.004$ ). Notably, males exhibited a substantial difference in 25(OH)D levels, with 18.01 (14.10, 23.53) in 2022 and 20.49 (16.11, 26.01) in 2023 ( $p<0.001$ ). The prevalence of vitamin D deficiency was significantly higher in 2022 (62%) compared to 2023 (54.9%,  $p=0.009$ ), with males having higher rates of deficiency (64.1% in 2022 and 47.2% in 2023). These findings were supported by an independent cohort of 168 individuals tested in both years, showing overall 25(OH)D levels of  $20.73 \pm 9.37$  in 2022 and  $22.28 \pm 8.59$  in 2023 ( $p=0.012$ ), and vitamin D deficiency rates of 58.3% in 2022 and 47.0% in 2023 ( $p=0.038$ ). In the 40-49 age group, 25(OH)D levels were significantly lower in 2022 (16.10, 12.41, 21.18) compared to 2023 (18.28, 13.91, 23.86,  $p=0.005$ ), with a higher vitamin D deficiency rate in 2022 (72.8%) compared to 2023 (59.9%,  $p=0.02$ ). Furthermore, in April, May, and June, 2022, 25(OH)D levels were significantly lower compared to 2023 ( $p<0.001$ ,  $p<0.002$ ,  $p<0.001$ , respectively), accompanied by a higher prevalence of vitamin D deficiency ( $p<0.001$ ,  $p<0.002$ ,  $p<0.001$ , respectively). In conclusion, our study findings indicate a substantial decline in vitamin D levels and an elevated prevalence of vitamin D deficiency among the adult population, with a particular emphasis on adult males, during the course of the COVID-19 pandemic.

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