

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 ± 9.37 in 2022 and 22.28 ± 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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