

Abstract

# Vitamin D Supplementation Practices in Slovenian Adults in Context of COVID-19 Pandemic <sup>†</sup>

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Vitamin D is a critical micronutrient in numerous body functions; it is important in musculoskeletal health and the functioning of the immune system. The prevalence of vitamin D deficiency is alarming worldwide. During winter, around 80% of adults in Slovenia have insufficient serum 25-hydroxy-vitamin D levels (<50 nmol/L) [1]. Low vitamin D status was also investigated as a risk factor in COVID-19, which led to increased media coverage on the significance of supplementation. Consequently, in Slovenia, the prevalence of supplementation rose from 33.7% (pre-pandemic) to 55.6% during the pandemic in December 2020 [2]. Our objective was to investigate changes in supplementation practices after the pandemic. We analysed data collected in three cross-sectional studies examining vitamin D supplementation in the adult population in Slovenia, Europe. The study details for the data collection in April 2020 and December 2020 are described elsewhere [2]; the same method was also used for the reported sampling in January 2023. Participants were recruited from a large consumer panel using quota sampling, resulting in a study sample representative of age, gender, and region. Participants completed the online survey upon invitation. A study in January 2023 was conducted on 800 adult subjects (18–65 years old), of which 57.6% (N = 461) reported supplementation with vitamin D. The median daily dosage of supplemented vitamin D was 25 µg. After COVID-19, the prevalence of supplementation was very comparable, with observations during the winter 2020 wave of the pandemic (57.6%) and notably higher than in the pre-pandemic winter of 2019/2020 (33.7%). No change was observed in the median vitamin D intake among supplement users. The findings of the study emphasized that general public awareness campaigns regarding vitamin D during the COVID-19 pandemic had lasting effects, as individuals continued with vitamin D supplementation during the winter even after the pandemic. However, approx. 40% of the population still remains at risk for deficiency.

**Author Contributions:** I.P. and K.Ž. conceived the study. I.P., K.Ž. and M.H. designed the study questionnaire. M.H., K.Ž. and I.P. analyzed and interpreted the data. M.H. wrote the first manuscript draft and all authors then made revisions. All authors have read and agreed to the published version of the manuscript.

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**Institutional Review Board Statement:** The studies involving human participants were reviewed and approved by Bioethical Committee of the VIST—Faculty of Applied Sciences in Ljubljana, Slovenia (VIST ET-6/2020).



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**Data Availability Statement:** The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

**Conflicts of Interest:** I.P. and K.Ž. are members of a national workgroup responsible for the development of recommendations for assuring adequate vitamin D status among the Slovenian population. All authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

## References

1. Hribar, M.; Hristov, H.; Gregorič, M.; Blaznik, U.; Zaletel, K.; Oblak, A.; Osredkar, J.; Kušar, A.; Žmitek, K.; Rogelj, I.; et al. Nutrihealth Study: Seasonal Variation in Vitamin D Status Among the Slovenian Adult and Elderly Population. *Nutrients* **2020**, *12*, 1838. [[CrossRef](#)] [[PubMed](#)]
2. Žmitek, K.; Hribar, M.; Lavriša, Ž.; Hristov, H.; Kušar, A.; Pravst, I. Socio-Demographic and Knowledge-Related Determinants of Vitamin D Supplementation in the Context of the COVID-19 Pandemic: Assessment of an Educational Intervention. *Front. Nutr.* **2021**, *8*, 648450. [[CrossRef](#)]

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