



Letter to the Editor

Limitations in Vitamin D Reference Values: Assessment of Vitamin D Levels and Their Relation to Glycemic Control in Sudanese Patients with Type 2 Diabetes Mellitus

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Dear Editor,

In an article published in the fourth issue of the *Sudan Journal of Medical Sciences* in 2023, Abdallah and Ahmed [1] investigated in a case–control study the association of serum vitamin D (VD) values with glycemic control in Sudanese patients with type 2 diabetes mellitus. They found that 20% of the case group exhibited suboptimal serum VD values, and 80% were VD-deficient. VD values were reduced significantly among the case group compared to the control group (P -value = 0.00). However, a negative association was found between glycated hemoglobin and serum VD levels (P -value = 0.017) [1]. We present a worthy study limitation. Precise assessment of VD status for a given population needs to refer to VD reference values (RV) designed for that population. The endocrine society clinical practice guideline is widely employed to assess VD status [2]. However, it is primarily intended for the Caucasian population. Since various variables such as age, gender, sunlight exposure, season, dietary style, socioeconomic background, and genetic factors are among the critical determinants of serum VD values estimations, different populations-specific VDRV have been formulated [3, 4]. In the study methodology, Abdallah and Ahmed [1] mentioned that serum VD values were measured using the ELISA method. However, they did not address whether they referred to a local or foreign VDRV to classify serum VD values into insufficiency, deficiency, and sufficiency grades. Using general reference values could lead to unwanted consequences such as misclassification of VD status. Consequently, this methodological limitation could significantly undermine the validity of the study findings. Future studies should consider applying population-specific RV when assessing VD levels to ensure more accurate and culturally relevant findings.

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Declarations

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Ethical Considerations

Not applicable.

Competing Interests

None.

Availability of Data and Material

Not applicable.

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Abbreviations and Symbols

VD: Vitamin D

RV: Reference values

References

- [1] Abdallah, O. A. A., Ahmed, A. A. E., (2023). Assessment of Vitamin D level and its relation to glycemic control among patients with type 2 diabetes mellitus in Khartoum State. Sudan Journal of Medical Sciences, 18(4), 444–452. <https://doi.org/10.18502/sjms.v18i4.14727>
- [2] Demay, M.B., Pittas, A.G., Bikle, D.D., Diab, D.L., Kiely, M.E., Lazaretti-Castro, M., Lips, P., Mitchell, D.M., Murad, M.H., Powers, S., Rao, S.D., Scragg, R., Tayek, J.A., Valent, A.M., Walsh, J.M.E., & McCartney, C.R, (2024). Vitamin D for the prevention of disease: An Endocrine Society Clinical Practice Guideline. The Journal of Clinical Endocrinology & Metabolism, 109(8), 1907–1947. <https://doi.org/10.1210/clinem/dgae290>
- [3] Zeng, S., Chu, C., Doebis, C., von Baehr, V., & Hoher, B., (2021). Reference values for free 25-hydroxy-vitamin D based on established total 25-hydroxy-vitamin D reference values. The Journal of Steroid Biochemistry and Molecular Biology, 210, 105877. <https://doi.org/10.1016/j.jsbmb.2021.105877>
- [4] Gupta, N., Agarwal, A., Jindal, R., & Sr, S., (2023). Estimating Vitamin D threshold for the Indian population: Delving into the actual disease burden. Medical Journal Armed Forces India, 79(Suppl 1), S224–S229. <https://doi.org/10.1016/j.mjafi.2022.08.001>