

# Population awareness regarding D vitamin and its role in immunomodulation in the COVID 19 Pandemia

## Abstract

International and national official surveys and publications have documented dietary deficiencies that may have deleterious repercussions to immunomodulation. Brazilian population that sought spontaneously for D Vitamin pre and post the Covid 19 pandemic was specially studied using databases collected throughout Brazil. The number of people that sought for their D vitamin levels were three times bigger during the pandemia. The mean D vitamin levels were significantly lower in the pandemic period as compared to the pre pandemic. Of the total of 1,421 tests performed in the observed period, 25.2% were performed in 2019 (prepandemic) and 74.8% were performed in 2020 or 2021 (pandemic). Most of the individuals tested were women over 20 years of age. The proportion of individuals over 60 years was higher in 2020-2021, compared to 2019 (12% vs. 39.5%). There was no significant difference in D vitamin mean between cohorts by gender, age or region. These results point to the awareness of having to live a healthy nutritional lifestyle and even follow guidance for supplementation.

**Keywords:** D vitamin, immunomodulation, Covid 19, nutritional deficiency, population awareness

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## Introduction

In the current course of the pandemic by COVID 19, food imbalance may have consequences in immunomodulation, one of which is in particular D vitamin.<sup>1-6</sup> International and national official surveys and publications have documented dietary deficiencies that may have deleterious repercussions to immunomodulation.

## Objective

To evaluate the degree of recognition of Brazilians who spontaneously sought their D vitamin dosages before and since after the COVID 19 pandemic, analyzing the motivations for the data found.

## Method

Working with databases collected throughout Brazil from individuals who spontaneously sought D vitamin dosages. Periods analyzed: pre-pandemic 2019 and post-pandemic 2020, 2021 (first trimester). In 2019 the number of dosages was 371, in 2020=923 and until March 2021=218. The classifications in the database

referred to: gender, age group and regions of Brazil. In 2019 there was a search in 70 health center and in the following period in 344. In 2019 the number of tests was 358, in the pandemic there were 1063. In all cases, the same Hilab remote laboratory test technique, immunochromatographic assay based on the sandwich binding principle, was used.

Statistical analysis was performed by the multivariate ANOVA method.

## Results

Of the total of 1,421 tests performed in the observed period, 25.2% were performed in 2019 (pre-pandemic) and 74.8% were performed in 2020 or 2021 (pandemic). Most of the individuals tested were women over 20 years of age. The proportion of individuals over 60 years was higher in 2020-2021, compared to 2019 (12% vs. 39.5%) three times bigger during the pandemia. The mean D vitamin levels were significantly lower in the pandemic period compared to the pre-pandemic period (2019: 20.44 ng/mL; 2020-2021: 17.8 ng/mL; F1=32.18, p<0.0001). There was no significant difference in D vitamin mean between cohorts by gender, age or region.

**Table 1** Distribution of patients' characteristics

|         | Total n = 1.421 % | 2019 n = 358 (25,2 %)% | 2020-2021 1.063 (74,8 %)% |
|---------|-------------------|------------------------|---------------------------|
| Gender  |                   |                        |                           |
| Female  | 59,0              | 52,51                  | 61,1                      |
| Male    | 39,0              | 46,65                  | 36,4                      |
| Unknown | 2,0               | 0,84                   | 2,4                       |

Table Continued...

|                  | Total n = 1.421 % | 2019 n = 358 (25,2 %)% | 2020-2021 1.063 (74,8 %)% |
|------------------|-------------------|------------------------|---------------------------|
| Age Group        |                   |                        |                           |
| 0 - 19           | 1,9               | 0,28                   | 2,4                       |
| 20 - 39          | 33,9              | 56,15                  | 26,3                      |
| 40 - 59          | 29,7              | 30,73                  | 29,4                      |
| 60+              | 32,6              | 12                     | 39,5                      |
| Unknown          | 2,0               | 0,84                   | 2,4                       |
| Brazilian Region |                   |                        |                           |
| Midwest          | 4,2               | 2,23                   | 4,9                       |
| Northeast        | 32,8              | 5,59                   | 42                        |
| North            | 4,1               | 0                      | 5,5                       |
| Southeast        | 35,7              | 60,89                  | 27,3                      |
| South            | 23,2              | 31,28                  | 20,4                      |

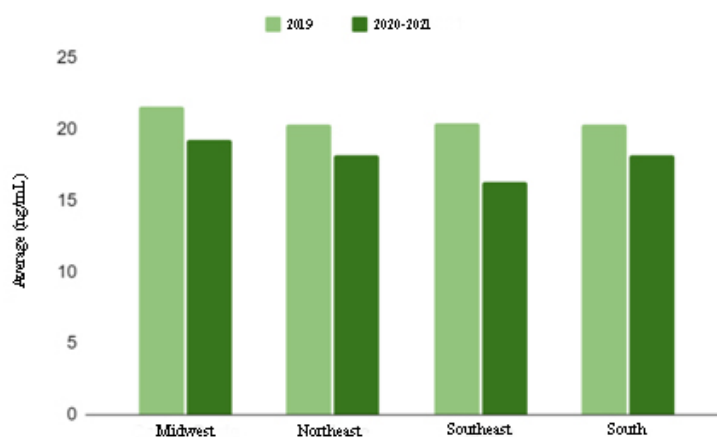


Figure 1 Means (ng/mL) of D vitamin values by geographic region of Brazil (except North region) and cohort.

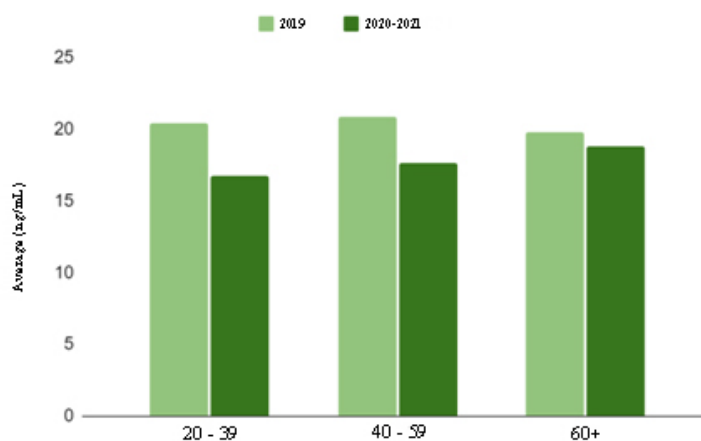


Figure 2 Means (ng/mL) of D vitamin values by age group (> 20 years) and cohort.

## Discussion

The results demonstrate a search for knowledge of very increased D vitamin levels in the post-pandemic, interpreted as intense dissemination of its immunoprotective role. At the same time there is the finding of lower mean value post-pandemic, which, although seeming paradoxical, points to the recognition of the need for adequate eating habits and healthy lifestyle.

## Conclusion

The dissemination of massive alertness regarding the participation of D vitamin in immunoprotection caused a greater number of people to want to become aware of their levels and pay attention to their normalization, following balanced nutritional and lifestyle behaviors, including guidance from a health professional regarding their supplementation whenever necessary.

## Acknowledgments

None.

## Conflicts of interest

The author declares there is no conflict of interest.

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