**VITAMIN D STATUS IN THE PEDIATRIC POPULATION IN THE PANDEMIC CONTEXT**

M.A.Vlad¹˒², C.E.Delia¹˒², M.D.Haidautu¹, N.Lacatus¹, M.G.Toma¹

Author affiliation:

¹ NIMCH Alessandrescu-Rusescu, Pediatric Component

² Faculty of Biology, Bucharest University

E-mail: [ma\_vlad@yahoo.com](mailto:ma_vlad@yahoo.com)

**Introduction**: Vitamin D-Colecalciferol is a fat soluble vitamin. It is present in a few foods and is produced endogenously when ultraviolet rays from sunlight strike the skin and trigger vitamin D synthesis. Vitamin D promotes calcium absorption in the gut and maintain serum calcium and phosphate concentrations. Vitamin D sufficiency prevents rickets in children and osteomalacia in adults. It help protect older adults from osteoporosis. Vitamin D deficiency can be associated with secondary hyper-parathyroidism in adults, can increasing risk of diabetes, cardiovascular diseases, autoimmune diseases and some forms of cancer. Has a role in reduction of inflammation. Serum concentration of 25-hydroxyvitamin D [25(OH)D]=Calcidiol, is currently the main indicator of vitamin status. It reflects vitamin D produced endogenously and that obtain from food and supplements. Circulating 1,25-dihydroxyvitamin D [1,25(OH)2D]=Calcitriol is not a good indicator of vitamin D status because it has a short half-time, measured in hours.

**Materials and methods**: The analyzed serum samples were obtained by collecting in a closed system, in coagulant free blood collection tubes. Samples were collected and analyzed from 3931 patients during 2020, and from 4389 patients during 2021. Data analysis was performed on several age groups: 0-3 years, 3-6 years, 6-10 years, 10-18 years and >19 years. The normal range given by our laboratory for vitamin D is: 75-175 nmol/L. The analysis of the samples was done with the Automatic Vidas PC, using appropriate kits for this analyzer. The assay principle combines an enzyme immunoassay competition method with a final fluorescent detection (ELFA) to 450 nm. The intensity of the fluorescence is inversely proportional to the concentration of vitamin D antigen present in the sample. At the end of the assay results are automatically calculated by the instrument in relation to the calibration curve stored in the analyzer memory.

**Results**: In 2020 from a total of 3931 samples, in 0-3 years group were 821 patients; in 3-6 years group were 513 patients; in 6-10 years group were 635 patients; in 10-18 years group were 698 patients and in >19 years group were 1264 patients. The average concentration for vitamin D in 0-3 years group was 104,322 nmol/L with a standard deviation (SD) of 47,32; for 3-6 years group was 83,461 nmol/L with a SD of 31,17; for 6-10 years group was 72,131 nmol/L with a SD 27,16; for 10-18 years group was 64,526 nmol/L with SD of 29,38 and for >19 years group was 59,682 nmol/L with SD of 28.70. In 2021 from a total of 4389 samples, in 0-3 years group were 1176 patients; in 3-6 years group were 875 patients; in 6-10 years group were 937 patients; in 10-18 years group were 1042 patients and in >19 years group were 359 patients. The average concentrations for vitamin D in 0-3 years group was 109,837 nmol/L with a SD of 51,49; in 3-6 years group was 86,221 nmol/L with a SD of 30,66; in 6-10 years group was 78,052 nmol/L with a SD of 29,72; in 10-18 years group was 68,615 nmol/L with a SD of 27,93 and in >19 years group was 70,931 with a SD of 27,06.

**Conclusions** : It can be seen that the SD for the 0-3 years group is increased compared to the other age groups. This group has the highest average value of vitamin D but, also the highest SD. In our experience, vitamin D levels in newborns and in the first months of children s life are low. But, starting with vitamin D prophylaxis, these values are obviously improved and finally the average is much higher for that group compare with to the rest of the groups studied. This, once again highlights the importance of vitamin D prophylaxis. For both years (2020 and 2021) there is a decrease in the average values of vitamin D, with increasing age of patients. In the same time, there is an increase in the average values ofvitamin D in 2021, compared to 2020 for all age group analyzed. This can be assumed to be due to the additional intake of vitamin D in the population in the context of the pandemic.