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Exploring the Effects of Vitamin D and Vitamin A Levels on the Response to COVID-19 Vaccine

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Abstract: COVID-19 vaccines were developed at an unprecedented speed in history. The factors affecting the response to COVID-19 vaccines are not clear. Herein, the effects of vitamin D and vitamin A (retinol) levels on the response to the BNT162b2 vaccine were explored. A total of 124 vaccine recipients were recruited from the general population attending vaccination centers in Irbid, Jordan. Blood samples were collected immediately before receiving the first vaccine dose (D0) and three weeks later (D21). Baseline (D0) levels of 25-hydroxyvitamin D [25(OH)D], retinol, and SARS-CoV-2 S1 IgG antibodies were measured with ELISA. The response to the BNT162b2 vaccine was tested by measuring the levels and avidity of SARS-CoV-2 S1 IgG antibodies on D21. The participants were divided into two groups, unexposed and exposed, based on the D0 SARS-CoV-2 antibody results. No significant correlation was found between the levels of 25(OH)D or retinol and the levels, avidity, or fold increase of antibodies in both groups. Similarly, no significant difference in antibody response was found between 25(OH)D status groups, retinol status groups, or combined status groups. These findings show that the baseline vitamin D or vitamin A levels have no effect on the short-term response to a single dose of BNT162b2 vaccine.