

Abstract

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The association of telomere length and serum 25-hydroxyvitamin D levels in US adults: the National Health and Nutrition Examination Survey.

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INTRODUCTION: Higher vitamin D levels and longer telomere length (TL) have been associated with lower risk of several chronic diseases and all-cause mortality. However, direct relationships between 25-hydroxyvitamin D (25(OH)D) levels and TL are not well established. Vitamin D could influence TL through its anti-inflammatory properties. This study aimed to assess the relationship between vitamin D levels and TL in US adults.

MATERIAL AND METHODS: Participants of the National Health and Nutrition Examination Survey (NHANES) with data available on 25(OH)D and TL measures from 2001 to 2002 were included. 25(OH)D levels were measured by the DiaSorin Radioimmunoassay. We used multivariable-adjusted linear regression models, accounting for the survey design and sample weights.

RESULTS: Of the 4347 eligible participants, 47.0% ($n = 2045$) were men. The mean age was 42.7 years overall, 49.2 years in men and 42.5 years in women ($p = 0.060$). After adjustment for age, race, marital status, education, and C-reactive protein, each 1 ng/ml higher 25(OH)D level was associated with a 0.045 (95% confidence interval (CI): 0.032 to 0.059) longer telomere-to-single copy gene (T/S) ratio. This was driven by a significant association in women (0.054 (0.043 to 0.064)) and in men (0.036 (0.020 to 0.052)). However, after we further adjusted for smoking, body mass index, and physical activity, no significant relation was found in the overall sample (β coefficient -0.026, 95% CI: -3.16, 1.67), for men (-0.016 (-3.72, 2.64)), or for women (-0.052 (-6.85, 2.26)).

CONCLUSIONS Our findings support a possible positive association between 25(OH)D levels and telomere length. The implications of this association deserve further investigation.

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