

# Abstract

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## Vitamin D deficiency and anemia: a cross-sectional study.

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**OBJECTIVE:** Vitamin D has been suggested to have an effect on erythropoiesis. We sought to evaluate the prevalence of anemia in a population of individuals with vitamin D deficiency compared with those with normal levels in a population of a large integrated healthplan.

**METHODS:** A cross-sectional analysis in the period 1 January 2004 through 31 December 2006 of subjects with documented concurrent levels of 25-hydroxyvitamin D and hemoglobin were evaluated. Vitamin D deficiency was defined as <30 ng/mL and anemia was defined as a hemoglobin <11 g/dL. A total of 554 subjects were included in the analysis.

**RESULTS:** Anemia was present in 49% of 25-hydroxyvitamin D-deficient subjects compared with 36% with normal 25-hydroxyvitamin D levels ( $p < 0.01$ ). Odds ratio for anemia in subjects with 25-hydroxyvitamin D deficiency using logistic regressions and controlling for age, gender, and chronic kidney disease was 1.9 (95% CI 1.3-2.7). 25-hydroxyvitamin D-deficient subjects had a lower mean Hb (11.0 vs. 11.7;  $p = 0.12$ ) and a higher prevalence of erythrocyte stimulating agent use (47% vs. 24%;  $p < 0.05$ ).

**CONCLUSION:** This study demonstrates an association of vitamin D deficiency and a greater risk of anemia, lower mean hemoglobin, and higher usage of erythrocyte-stimulating agents. Future randomized studies are warranted to examine whether vitamin D directly affects erythropoiesis.

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