Vitamin D deficiency among children and adolescents living in sunny South Texas

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Exposure to sunlight is essential to produce Vitamin D (ViD). Recent studies suggest obesity is associated with low ViD concentration. Living in South Texas with 220 sunny days a year should be enough to maintain adequate ViD levels. We aimed to analyze ViD levels and obesity in children and adolescents.
We included 1239 pediatric (1.5 to 18.8 years old) participants (primary care clinic from Laredo) with registered CDC percentiles of BMI (pBMI) and serum concentrations of ViD (Atellica™). Data are described as median (p25, p75), Loess correlation between pBMI and ViD, ANCOVA to adjust by age, sex, and pBMI. We used the program Stata v16.1. The size of effects is expressed as Cohen-d and eta squared (eta2).
The median age was 12.5 (9.5, 15.1) years, pBMI was 94 (80, 98), 49% females (n=611). The pBMI showed small differences by sex (M 82.1±24 vs M 84.5±23, Cohen-d 0.14, p<0.07) The ViD concentration was 18.2 (14, 23.3) ng/mL, with differences by sex (F 2.8±3.6 vs M 2.9±3.6, Cohen-d 0.34, p,0.001). The Loess showed an inverse relationship between pBMI with a rapid drop of ViD from p90. The ANCOVA coefficients were negative for sex (b=- 0.32 for females p=0.007, eta2=0.03) and pBMI (b=-0.001, p=0.025, eta2=0.15) on ViD concentration.
We conclude obesity and female are related to low concentration VitD in sunny Laredo. Perhaps participants with more pBMI have less outdoor physical activity and increased sequester of ViD from adipose tissue. Future research should analyze the effect of these findings on adulthood morbidity.