

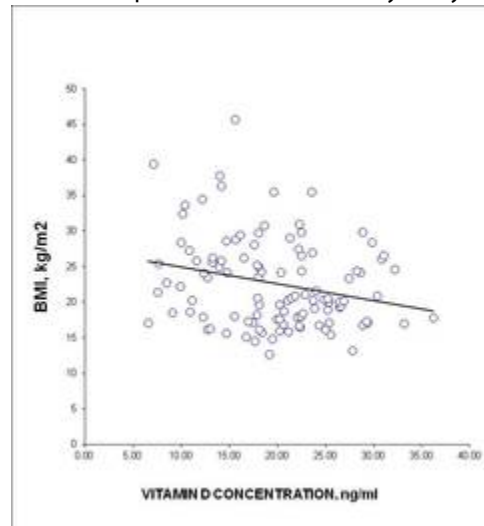
Relationships Between Vitamin D Concentrations And Race, Sex And BMI Among Children With Poor Asthma Control

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Relationship between Serum 25-hydroxy Vitamin D and BMI among Children with Poor Asthma Control



Recent epidemiological, disease-association, and genetic studies strongly link hypovitaminosis D, defined by low vitamin D plasma concentrations, with asthma prevalence, severity and exacerbation risk. Geographic latitude, solar exposure, urbanization, race and diet are factors that contribute to hypovitaminosis D in children and adults. Compared to whites, the prevalence and severity of asthma are greater among blacks. Whereas factors associated with hypovitaminosis D among pediatric asthmatics have not been well studied, we tested the hypothesis that serum vitamin D concentrations are negatively associated with race and obesity status. **METHODS:** We measured 25-hydroxy vitamin D (VitD) plasma concentrations by RIA using LIAISON® Dianorm in 111 children with poorly controlled asthma taking inhaled corticosteroids in a study completed by The American Lung Association Network of Asthma Clinical Research Centers.

RESULTS: 95% and 49% of the participants had VitD levels ≤ 30 ng/ml and ≤ 20 ng/ml, respectively. Mean ($\pm$ SD) VitD concentrations in blacks were lower than in whites: 18 ± 6.4 vs. 23 ± 5.4 ng/ml, respectively; $p = 7 \times 10^{-5}$. VitD concentrations were lower in black females compared to white females and were 16 ± 5.4 and 25 ± 3.8 ng/ml, respectively; $p = 7 \times 10^{-7}$. However, VitD concentrations in black and white males were similar: 19 ± 6.6 vs. 21 ± 5.9 ng/ml, respectively; $p = 0.2$. There was a negative correlation between BMI and VitD levels (r -square = -0.247 , $p < .01$) (figure).

CONCLUSIONS: Among children with poorly controlled asthma, Hypovitaminosis D (Levels ≤ 30 ng/ml) is highly prevalent and negatively correlated with BMI. VitD levels differ by race; the racial disparity in vitD levels may be driven by reduced levels specific to black females. Female sex, black race and obesity appear to be risk factors for hypovitaminosis D among this cohort of children with poor asthma control. Further analysis is needed among these interrelated factors to assess confounding effects.

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