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Title: Relationship between vitamin D status and lung function in the Baltimore longitudinal study of aging

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Body: Introduction: The relationship between vitamin D status and lung function in adults is not clear. Vitamin D has anti-inflammatory and immunomodulatory properties that may affect lung function. Aims and objectives: Our objective was to examine the relationship between vitamin D status and lung function in subjects from the Baltimore Longitudinal Study of Aging. Methods: 1042 subjects (515 males, mean age: 66.7 years) were selected for this cross-sectional analysis. The population consists of adult, healthy volunteers that are followed indefinitely with serial evaluations over time. 190 of 1042 had obstructive airflow limitation (FEV1/FVC < 0.7). Serum 25-(OH) vitamin D levels were assayed in duplicate and measured by liquid chromatography-mass spectrometry at Mayo Clinic laboratories (Rochester, MN). Lung function was measured at the same time as the blood sampling. FEV1 % predicted was calculated using ERS'93 regressions. Results: Using linear regression we found that vitamin D status was associated with FEV1 % predicted ($\beta = 0.258$; $P = 0.001$). This association remained ($\beta = 0.212$; $P = 0.007$) after adjusting the analysis for age, body mass index (BMI), health status (healthy/not healthy. Healthy = no cancer or other major illness), seasonality, and physical activity (0-3. 0 = sedentary). If the analysis is performed only in the subjects with obstructive airflow limitation, only age and BMI were significantly associated with FEV1 % predicted (β of vitamin D = 0.017; $P > 0.05$). Conclusion: We found a positive association between vitamin D status and FEV1 % predicted. However, longitudinal data analysis is warranted to prove a causal relationship.