**ABSTRACT**

**Background:** Hypovitaminosis D has been linked to several non-bone related diseases. Relation between serum 25-hydroxyvitamin D (25(OH)D) and lung function and lung diseases has received less attention. **Methods:** Data from 3 National Health and Nutrition Examination Surveys (NHANES) cycles, 2007-2012 were used. The sample size was 11983. Lung function markers such as forced vital capacity (FVC) and forced expiratory volume in 1 second (FEV1) were collected with Spirometry. Relation between serum 25(OH)D and lung function markers was assessed by the multivariate regression. Result: Serum 25(OH)D and prevalence of asthma, emphysema, and chronic bronchitis were assessed with multivariate-adjusted logistic regression. **Results:** Serum 25(OH)D was significantly associated with FVC and FEV1 (P < 0.001). When data were stratified based on sex and smoking status, we found similar associations between serum 25(OH)D and lung function markers. No relation was found between serum 25(OH)D and prevalence of asthma, chronic bronchitis, and emphysema. Conclusions: Serum 25(OH)D is significantly associated with improved lung function markers. Controlled studies are needed to determine if improved serum 25(OH)D will improve the lung function in adults.

**INTRODUCTION**

- Vitamin D is a lipophilic vitamin. Suboptimal vitamin D status is a global health problem.
- 25(OH)D is a major circulating form of vitamin D.
- Vitamin D classical function is to maintain calcium homeostasis.
- Recent evidence supports a role for vitamin D in non-bone diseases such as heart diseases, cancer, and neuro-muscular diseases.
- Asthma, chronic inflammation of the airways resulting in wheezing, shortness of breath, cough and chest pains. While high concentrations helped to decrease severity and number of asthma attacks to half, in mild to moderate cases of asthma.
- Objective was to investigate the relation between serum 25(OH)D and lung function markers and lung diseases in adults.

**METHODOLOGY**

- Data from >19 years and older participants from 3 NHANES cycles (2007-2008, 2009-2010, and 2011-2012) were used (n=11983). These 3 cycles were combined into one analytic file, NHANES 2007-2012.
- Liquid chromatography-tandem mass spectrometry was used to measure the serum 25(OH)D.
- FVC and FEV1 are available only in NHANES 2007-2012 cycles.
- Asthma, chronic bronchitis, and emphysema were self-reported by participants during the personal interview.
- Serum 25(OH)D concentrations were stratified into quartiles.
- Data analysis was performed with STATA software.
- Relation between serum 25(OH)D concentrations and lung function markers was assessed using the multivariate linear regression.
- Relation between serum 25(OH)D and prevalence of asthma, chronic bronchitis, and emphysema was assessed with multivariate-adjusted logistic regression.
- Analysis was adjusted for age, sex, race-ethnicity, physical activity-sedentary, poverty income ratio, smoking, alcohol consumption, vitamin D supplements use, season of examination, and BMI.

**RESULTS**

- In the multivariate adjusted models, serum 25(OH)D concentrations were significantly, positively associated with lung function markers, i.e., FVC and FEV1 (P < 0.001).
- No relationship was observed between serum 25(OH)D concentrations and the prevalence of asthma emphysema, and chronic bronchitis in both unadjusted and multivariate adjusted analysis.

**CONCLUSION**

- Serum 25(OH)D is significantly, directly associated with lung function markers such as FVC and FEV1.
- Serum 25(OH)D was not associated with prevalence of asthma, emphysema and chronic bronchitis.
- Controlled studies are needed to determine if improved serum 25(OH)D will improve the lung function in adults.

**REFERENCES**


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