

## Association of Vitamin D Status with Pulmonary Function in Adult

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) Positive correlation of vitamin D with FEV

and FEV<sub>1</sub>/FVC ratio is seen. (P value <0.05, r value 0.643 and p value <0.05, r value 0.714 respectively).

**Conclusion:** Vitamin D levels are significantly low in uncontrolled asthma. Asthmatics with a higher level of vitamin D have better pulmonary function and thereby a better quality of life.



\*indicates p value <0.05 which is considered statistically significant  
FVC: Forced Vital Capacity FEV1: Forced Expiratory Volume in 1 Second.

\*indicates p value <0.01 which was considered statistically significant Association was evaluated by Pearson's correlation method.

Table 2 shows the association of the serum 25-OH Cholecalciferol levels with FEV1 and FEV1/FVC ratio. The Correlation was significantly positive between Vitamin D and FEV1 and Vitamin D and FEV1/FVC ratio with a p value of <0.01 and r value of 0.643 and p value of <0.01 and r value of 0.714 which indicates that there is a positive correlation between increased Vitamin D levels and a good pulmonary function.

The importance of Calcitriol on various pathological processes have been identified only in recent years. Calcitriol also has a role in many pulmonary disorders as well. It helps in regulations of the immunity by interacting with vitamin D receptors (VDRs), expressed on immune cells in the Respiratory tract. They act as nuclear steroid hormone receptors and helps in regulation of gene transcription associated with inflammation and immunomodulation [4]. Higher levels of Calcitriol has been associated with better lung function which is measured by forced expiratory volume in 1 s (FEV<sub>1</sub>) in a cross-sectional study of a large U.S. population in the NHANES III [4]. There are very few studies in south Indian population comparing pulmonary function with vitamin D status in asthmatic patients. This study was planned to find if an association is present between lung function and serum levels of Vitamin D.

In this study sixty adults who had asthma attending the outpatient department of pulmonary medicine were included. The subjects were diagnosed according to GINA guidelines and grouped into two groups namely group 1 and 2 which included subjects with well controlled asthma and subjects with uncontrolled asthma/acute exacerbation of asthma. (a)– serum 25(OH) Cholecalciferol levels (b) Serum calcium, (c) Serum phosphate and (d) Lung function test were assessed and compared between the two groups. A correlation analysis was done to see if there was an association between pulmonary function and vitamin D.

This study documents that high levels of vitamin D was seen in asthma patients who had well controlled asthma as compared to uncontrolled group (p<0.05). There was a significant positive

Other immunological parameters like IgE, Eosinophil could also have been included.

### **Implications**

There is association between Deficiency in vitamin D levels and severity of asthma and also decreased lung function. This study suggests that a decrease in the severity of asthma, exacerbations and an improvement in pulmonary function can be achieved by in taking adequate levels of vitamin D.

### **Conclusion**

In conclusion to our study we have important information about the levels of vitamin D in adult asthmatics in Puducherry population. We were able to prove that deficiency of Vitamin D in patients with asthma is common and more so in patients with asthma that was uncontrolled and also had frequent episodes of acute exacerbations. We also found significant correlation between serum levels of vitamin D and lung function test.

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### **References**

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