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Title: The association between vitamin D and FEV1 in a general population is not explained by eNO

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Body: Studies have demonstrated a role for vitamin D in inflammation and host defense against infection. In patients with obstructive lung diseases higher vitamin D levels are associated with a better lung function. We aimed to study the association between vitamin D and lung function (FEV1), and to which extent this association could be explained by exhaled nitric oxide (eNO), as a measure of airways inflammation, in a general population. This is a cross-sectional analysis of the baseline measurements of the Netherlands Epidemiology of Obesity study, a cohort of participants aged 45 to 65 years with an oversampling of BMI \geq 27kg/m². We used linear regression to study the associations of serum 25-hydroxyvitamin D concentrations with FEV1 and eNO, adjusting for age, sex, ethnicity, month and year, recent cold, asthma and total body fat. After exclusion of participants with missing data (n=166), 5146 adults were included with a mean (SD) age of 56 (6) y, BMI of 30.6 (4.8) kg/m² and total body fat of 37 (9) %. 47 % were men, 6% had asthma and 25% had a cold within the last month. The median (IQR) eNO was 18 (11-22) ppb, 25-hydroxyvitamin D 57 (39-71) nmol/l and the mean (SD) FEV1 was 104 (16) %. Serum 25-hydroxyvitamin D was associated with FEV1 (beta 0.09, 95% CI 0.07-0.10) this attenuated after adjustment for confounding (beta 0.03, 95% CI 0.01-0.05) but did not further change after adjustment for eNO. There was no association of eNO (beta 0.00 95% CI -0.001-0.000) with 25-hydroxyvitamin D, nor with FEV1 (beta 0.00 95% CI 0.000-0.001). Conclusion: In a general population serum 25-hydroxyvitamin D was associated with FEV1. This association was not explained by airways inflammation as assessed by eNO.