Vitamin D status has a linear association with seasonal infections and lung function in British adults.

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Abstract
Higher vitamin D concentrations have been proposed as a protective 'seasonal stimulus' against influenza, and there are suggestions for associations with other aspects of respiratory health. The aim of the present study was to investigate the relationship of current vitamin D status (measured by 25-hydroxyvitamin D, 25(OH)D) with respiratory infections and lung function. We used cross-sectional data from 6789 participants in the nationwide 1958 British birth cohort who had measurements of 25(OH)D, lung function (forced expiratory volume in 1 s (FEV1) and forced vital capacity (FVC)) and respiratory infections available from the age of 45 years. In this population, the prevalence of respiratory infections had a strong seasonal pattern in the opposite direction to the pattern for 25(OH)D concentrations. Each 10 nmol/l increase in 25(OH)D was associated with a 7% lower risk of infection (95% CI 3, 11%) after adjustment for adiposity, lifestyle and socio-economic factors. For FEV1 and FVC, each 10 nmol/l increase in 25(OH)D was associated with 8 (95% CI 3, 13) ml and 13 (95% CI 7, 20) ml higher volume, respectively, after controlling for covariates. Associations of 25(OH)D with FEV1 and FVC were only slightly attenuated after further adjustment for infection and other respiratory illness. In conclusion, vitamin D status had a linear relationship with respiratory infections and lung function. Randomised controlled trials are warranted to investigate the role of vitamin D supplementation on respiratory health and to establish the underlying mechanisms.

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