

## Publication

### Longitudinal change of prebronchodilator spirometric obstruction and health outcomes : results from the SAPALDIA cohort

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**Background** Understanding the prognostic meaning of early stages of chronic obstructive pulmonary disease (COPD) in the general population is relevant for discussions about underdiagnosis. To date, COPD prevalence and incidence have often been estimated using prebronchodilation spirometry instead of post-bronchodilation spirometry. In the SAPALDIA (Swiss Study on Air Pollution and Lung Disease in Adults) cohort, time course, clinical relevance and determinants of severity stages of obstruction were investigated using prebronchodilator spirometry. **Methods** Incident obstruction was defined as an FEV(1)/FVC (forced expiratory volume in 1 s/forced vital capacity) ratio  $\geq 0.70$  at baseline and  $< 0.70$  at follow-up, and non-persistence was defined inversely. Determinants were assessed in 5490 adults with spirometry and respiratory symptom data in 1991 and 2002 using Poisson regression controlling for self-declared asthma and wheezing. Change in obstruction severity (defined analogously to the GOLD (Global Initiative for Chronic Obstructive Lung Disease) classification) over 11 years was related to shortness of breath and health service utilisation for respiratory problems by logistic models. **Results** The incidence rate of obstruction was 14.2 cases/1000 person years. 20.9% of obstructive cases ( $n = 113/540$ ) were non-persistent. Age, smoking, chronic bronchitis and non-current asthma were determinants of incidence. After adjustment for asthma, only progressive stage I or persistent stage II obstruction was associated with shortness of breath (OR 1.71, 95% CI 0.83 to 3.54; OR 3.11, 95% CI 1.50 to 6.42, respectively) and health service utilisation for respiratory problems (OR 2.49, 95% CI 1.02 to 6.10; OR 4.17 95% CI 1.91 to 9.13, respectively) at follow-up. **Conclusions** The observed non-persistence of obstruction suggests that prebronchodilation spirometry, as used in epidemiological studies, might misclassify COPD. Future epidemiological studies should consider both prebronchodilation and postbronchodilation measurements and take specific clinical factors related to asthma and COPD into consideration for estimation of disease burden and prediction of health outcomes

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