

TITLE OF THE PROJECT: Prevalence, determinants and impact of chronic airflow limitation and accelerated lung function decline

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SUMMARY

Background

Few data are available on risk factors of lung function decline in the general population. Better knowledge of these factors should help targeting at-risk populations requiring more intensive detection, follow-up and care to prevent poor outcomes.

Objectives

The purpose of this study will be to assess (1) factors associated with abnormal lung function and rate of lung function decline in the CONSTANCES cohort, and (2) the relevance of lung function as a marker of health status. Analyses will focus on:

1. Possible risk factors: exposures to environmental hazards including tobacco smoke and occupational exposures, socio-economic characteristics, intrinsic factors including age and gender, and some selected genetic risk factors and biomarkers.
2. Possible consequences of lung function impairment regarding morbidity, comorbid illnesses, health-related quality of life and handicap, consumption of health care resources and indirect costs.

Methods

Questionnaire, spirometry and biological data from Constances will be used.

Normal values of FEV1, FVC and FEV1/FVC ratio will be determined using previously published equations and equations derived from the non-smoking asymptomatic fraction of the CONSTANCES population.

Spirometry will be used to identify airflow obstruction (as defined by $FEV1/FVC < 0.70$ or $<$ lower limit of normal, LLN) and probable restrictive patterns, as defined by $FVC < LLN$ with $FEV1/FVC > LLN$.

The severity airflow obstruction will be classified using FEV1, and the severity of restrictive patterns will be classified using FVC.

Analyses: A dual approach will be used, studying:

- Factors (risk factors and markers of impact on health status) associated with abnormal lung function (airflow obstruction or restrictive pattern and their severity) at baseline.
- Factors (risk factors and markers of impact on health status) associated with the rate of FEV1, FVC and FEV1/FVC decline (categorized using tertiles) and occurrence of airflow obstruction or restrictive pattern during follow-up.

Factors associated with $FEV1 < LLN$ without neither airflow obstruction nor restrictive pattern will also be studied.

Risk factors of interest will be intrinsic risk factors (age, gender, obesity), environmental hazards (active and passive smoking, occupation and occupational exposure to vapors, dust, gas or fumes, biomass combustion in the home, atmospheric air pollution), nutritional habits, socio-economic status, nutritional habits, stress and psychological status, level of physical activity.

Genomic and proteomic studies will be addressed in a future application.

Markers of health status of interest will be respiratory symptoms, selected comorbidities (cardiovascular diseases, osteoporosis, depression, lung cancer), Health-related quality of life, activity of daily living, handicap and limitations, missed working days, consumption of healthcare resources.

Muscle strength and cognitive functions will also be studied in elderly subjects.

Gender-related and age-related differences in the risk factors-adjusted prevalence, severity and impact of lung function impairment will also be studied.

Statistical methods: associations will be studied using:

- univariate analysis followed by multivariate models to determine which factors are independently associated with lung function variables and their evolution, and their respective weights as determinants of lung function.
- factor analyses including principal component, multiple correspondence and cluster analyses.

Note: this project is part of the research consortium 'CONSTANCESRespi – Surveillance, determinants, natural history and impact of chronic respiratory diseases and accelerated lung function decline in CONSTANCES - An Integrative project'