

AIR POLLUTION DECLINE, BODY MASS INDEX AND PULMONARY FUNCTION: THE ROLE OF GENDER

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Background and Aims: Reduction in air pollution has been associated with an attenuation of lung function decline in adults¹. Since obese people have an accelerated age-related decline in lung function we aimed to assess whether the impact of air pollution on the longitudinal course of lung function is modified by BMI and whether this effect differs by gender.

Methods: Data from the population-based SAPALDIA cohort was used. Baseline and follow-up assessments were in 1991 and 2002, respectively. Weight status was based on average BMI and change in BMI between surveys divided in four categories: underweight, normal, overweight and obese. Outcomes were the annual rates of change in different lung function (LF) parameters: FEV₁, FVC, FEV₁/FVC and forced expiratory flow between 25% and 75% of FVC (FEF₂₅₋₇₅). Exposure was the difference in PM₁₀ at residence between follow-up and baseline. Mixed linear models with random area intercepts were used to estimate effects of air pollution and obesity on LF adjusted for potential confounders.

Results: Lung function data and complete information on potential confounders were available in 4729 participants. PM₁₀ levels declined over the study period of 11 years (median: -5.3µg/m³). Among never-smokers, women had a higher benefit in lung function from a reduction in air pollution than men. The beneficial effect of declining air pollution decreased with increasing BMI. On average, a decline of PM₁₀ by 10 µg/m² over the entire follow-up period was associated with an attenuation of the annual age-related decrease of FEF₂₅₋₇₅ by 18.1% (CI_{95%}= [31.3; 5.0]) in the normal weight women, whereas no attenuation was found in overweight or obese women.

Conclusion: First results suggest that overweight or obese women may not benefit from the previously published beneficial effect of a decline in PM₁₀ on the small airways. However, overall men did not benefit to the same degree than women.

Referenzen:

1. Downs SH, Schindler C, Liu LJ, Keidel D, Bayer-Oglesby L, Brutsche MH, Gerbase MW, Keller R, Kunzli N, Leuenberger P *et al*. **Reduced exposure to PM10 and attenuated age-related decline in lung function.** *N Engl J Med* 2007, **357**(23):2338-2347.