PARTICLE POLLUTION AND COPD IN THE SALIA COHORT (1985-1994) – SENSITIVITY ANALYSIS USING BASELINE AND ESCAPE EXPOSURE DATA

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Background and Aims: ESCAPE, the European Study of Cohorts for Air Pollution Effects, was initiated in 2008. Chronic obstructive pulmonary disease (COPD) is one of four respiratory outcomes to be investigated in five studies of adults. All studies were conducted 10-20 years ago while ESCAPE pollution models reflect current conditions. An association between COPD and particle pollution (1) was published for SALIA, one of the cohort studies included. We now investigate whether the SALIA-results found for the investigation 1985-1994 can be replicated using the newly developed PM_{10} land-use regression (LUR) models of ESCAPE instead of the former SALIA estimates.
Methods: Spirometry was performed in N=2593 women living in the Ruhr- and adjacent less polluted areas. We used GOLD criteria to define COPD (FEV_1/FVC ratio <0.7 and FEV_1 <80% of predicted). PM_{10} exposure was previously assessed by measurements from monitoring stations. In ESCAPE, PM_{10} was measured at 20 locations to derive a LUR. Logistic regression was used to determine the adjusted association between exposure and COPD. Effect-estimates were based on interquartile-ranges of exposure, thus being invariant to homogeneous linear time trends.
Results: Prevalence of COPD was 4.0%. The odds-ratio describing the association with PM_{10} using means of the 5 years before baseline was 2.63 (95% Confidence interval 1.37-5.06). Using PM_{10} from the new land use regression models the odds-ratio was 2.27 (1.61-3.19).
Conclusions: The association between COPD and particle pollution as observed in SALIA is not sensitive to the use of a more current LUR to assign exposure. The slightly different odds-ratios might be due to small deviations from simple linear trends or differences in the spatial resolution.
References:

(1) Schikowski T, Sugiri D, Ranft U, Gehring U, Heinrich J, Wichmann HE, Krämer U: Long-term air pollution exposure and living close to busy roads are associated with COPD in women. Respir Res 2005, 6:152.