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| Differential air pollutant-related associations with dry and productive cough in middle-aged adults |
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| **Introduction/Aim:** Evidence on associations between ambient air pollution and adult chronic cough with inconsistent findings. We aimed to assess such associations using both novel cough subclasses1 and standard cough definitions as outcomes.  1 *Zhang et al. Lancet Respiratory Medicine, 2023 (In press).*  **Methods:** Ambient air pollution exposures were calculated for participants of the Tasmanian Longitudinal Health Study using their residential addresses at age 43 years, including annual mean ambient exposure levels of fine particulate matter with an aerodynamic diameter ≤ 2.5μm (PM2.5, μg/m3) and nitrogen dioxide levels (NO2, ppb) estimated by land-use regression models; and distance from a major road (DMR, metres). Outcomes included a novel six-class cough classification at age 53 years that we recently identified by latent class analysis (minimal cough, cough with colds only, cough with allergies, intermittent productive cough, chronic dry cough, and chronic productive cough subclasses, all compared to non-coughers)1; and incident cough from ages 43 to 53 years using standard definitions: chronic cough (cough ≥ 3 months), chronic phlegm (phlegm ≥ 3 months), and chronic bronchitis (cough and phlegm ≥ 3 months for 2 years, respectively). Multivariable regression models were used to investigate the relevant associations.  **Results:** Of the 2697 participants with complete data, ambient PM2.5 and NO2 (median, interquartile range [IQR]) at age 43 years were 5.9μg/m3 (IQR=2.0), and 4.3 ppb (IQR=2.3), respectively. Increased PM2.5 per 2.0μg/m3 increment (IQR)was associated with “chronic dry cough” (adjusted [multinomial] odds ratio [a(M)OR] = 2.72, 95% confidence interval [CI]: 1.03-7.18). Conversely, NO2 per 2.3ppb increment (IQR) was associated with “intermittent productive cough” (aMOR=1.62, 1.06-2.47), “chronic productive cough” (aMOR=1.97, 1.02-3.81), standard chronic phlegm (aOR=1.29, 1.06-1.58), and standard chronic bronchitis (aOR=1.37, 1.08-1.74). DMR<200m was associated with “chronic productive cough” (aMOR=5.31, 1.26-22.40) and standard chronic cough (aOR=1.54, 1.10-2.16).  **Conclusion:** Ambient PM2.5 was associated with chronic dry cough in adults, while NO2 was associated with productive cough even in a low pollution setting. Future studies should consider analysing dry and productive chronic cough separately.  **Grant Support:** NHMRC. |