Gender-based fatal effects of ambient air pollution

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We read with interest the recent article of Liu et al. (2019), who carried out a large analysis of deaths attributable to ambient air pollution in Northeastern China during 2014–2017, concluding that exposure to particulate matter (PM) was associated with mortality in women but not in men. With the aim to provide further insights on gender-based differences in mortality for atherosclerotic heart disease due to PM, we carried out an electronic search in the Global Health Data Exchange (GHDx) registry, a large database of health-related data maintained by the Institute for Health Metrics and Evaluation (Institute for Health Metrics and Evaluation 2019), using the keywords “particulate matter pollution” and “ischaemic heart disease,” combined with the epidemiologic variables “deaths,” “year” (“2017”), “sex” (“male” and “female”), and “location” (“global” and “China”).

According to our search in the GHDx database, the worldwide deaths for ischemic heart disease (IHD) attributable to PM exposure could be estimated at 1.387 million (0.810 million in men and 0.577 women) in 2017, 0.292 million of which in China (21.1%; 0.166 million in men and 0.126 million in women). Compared with the worldwide mortality for IHD, those attributable to PM exposure accounted for 0.810/4.904 million cases (16.5%) in men and 0.577/4.026 million cases (14.3%) in women, respectively. Similar evidence could be found in China, whereby IHD mortality attributable to PM exposure accounted for 0.166/0.944 million cases (17.6%) in men and 0.126/0.806 million cases (15.6%) in women, respectively. This estimations would actually translate into a risk

of dying for IHD due to PM exposure that is ~ 18% higher in men than in women around the world (odds ratio, 1.18; 95% confidence interval, 1.18–1.19; $p < 0.001$), and that is similarly ~ 16% higher in the male sex in China (odds ratio, 1.16; 95% confidence interval, 1.15–1.17; $p < 0.001$).

Although some peculiar variations may be seen on local basis, as recently shown by Liu et al. (2019), our analysis on the GHDx database suggests that the cumulative gender-based fatal effects of ambient PM exposure may be higher in men than in women, both on a nationwide basis in China and around the world.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflicts of interest.

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