Burden of disease from joint Household and Ambient Air Pollution for 2012

Description of method
The burden of disease attributable to the joint effects of household and ambient air pollution for the year 2012 was estimated based on the calculation of the joint population attributable fractions assuming independently distributed exposures and independent hazards as described in (1). The joint population attributable fractions (PAF) were calculated using the following formula:

\[ PAF = 1 - \prod_{i=1}^{n}(1 - PAF_i) \]

where PAF\(_i\) is PAF of individual risk factors.

Detailed method descriptions of the separate burden of disease attributable to household and ambient air pollution are described elsewhere (2).

Note of caution
An approximation of the combined effects of risk factors is possible if independence and little correlation between risk factors with impacts on the same diseases can be assumed (1). In the case of air pollution, however, there are some limitations to estimate the joint effects: limited knowledge on the distribution of the population exposed to both household and ambient air pollution, correlation of exposures at individual level as household air pollution is a contributor to ambient air pollution, and non-linear interactions (3, 4). In several regions, however, household air pollution remains mainly a rural issue, while ambient air pollution is predominantly an urban problem. Also, in some continents, many countries are relatively unaffected by household air pollution, while ambient air pollution is a major concern. If assuming independence and little correlation, a rough estimate of the total impact can be calculated, which is less than the sum of the impact of the two risk factors. The joint effects of both ambient and household air pollution would result in the impacts shown the document “Burden of disease from the joint effects of Household and Ambient Air Pollution for 2012”. Given the limitations, however, the estimates presented should be interpreted with caution, and provide indicative values only.

References


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