

# INDOOR AIR POLLUTION AND BLOOD PRESSURE IN ADULT WOMEN LIVING IN RURAL CHINA

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**Background and Aims:** Almost half the world's population is exposed to indoor air pollution (IAP) from use of coal and biomass fuels for domestic energy<sup>1</sup>. We investigated the association of IAP exposure with elevated blood pressure, which is an important risk factor for renal and cardiovascular disease.

**Methods:** We measured 24-hr personal integrated gravimetric exposure to particles less than 2.5 microns in aerodynamic diameter (PM<sub>2.5</sub>) and systolic (SBP) and diastolic blood pressure (DBP) in the summer and winter among 280 women  $\geq 25$  years old living in rural households using biomass fuels in Yunnan, China. We investigated the association between PM<sub>2.5</sub> exposure and SBP/DBP using mixed-effects models with random intercepts to account for correlation among repeated measures.

**Results:** Personal 24-hr exposure to PM<sub>2.5</sub> ranged from 22 to 634  $\mu\text{g}/\text{m}^3$  in winter and 9 to 492  $\mu\text{g}/\text{m}^3$  in summer. A one log- $\mu\text{g}/\text{m}^3$  increase in PM<sub>2.5</sub> exposure was associated with 2.2 mmHg (95% CI: 0.8, 3.7;  $p=0.003$ ) higher SBP and 0.5 mmHg (95% CI: -0.4, 1.3;  $p=0.31$ ) higher DBP among all women, but the effect was dependent on age. Among women  $>50$  years old, a one log- $\mu\text{g}/\text{m}^3$  increase in PM<sub>2.5</sub> exposure was associated with 4.1 mmHg (95% CI: 1.5, 6.6;  $p=0.002$ ) higher SBP and 1.8 mmHg (95% CI: 0.4, 3.2;  $p=0.01$ ) higher DBP. PM<sub>2.5</sub> exposure was positively associated with SBP among younger women, but the association was not statistically significant.

**Conclusion:** Our results suggest that PM<sub>2.5</sub> exposure from biomass combustion may be a risk factor for elevated blood pressure, and hence for cardiovascular diseases. Issues of energy and IAP should therefore be considered in the formulation of policies and interventions aimed at reducing the burden of cardiovascular disease in China and other countries where domestic biomass fuel use is common. Our findings should be confirmed in longitudinal studies.

## References:

1. Smith KR, Mehta S. and Maeusezahl-Feuz M. 2004. Indoor smoke from household solid fuels. In: Comparative Quantification of Health Risks: Global and Regional Burden of Disease Attributable to Selected Major Risk Factors (Ezzati M, Lopez AD, Rodgers A. and Murray CJL, eds). Geneva: World Health Organization, 1435-1493.