

Supplemental materials

1. Cohort details

The China-PAR project included four prospective subcohorts, including the China MUCA (1992-1994) (China Multi-Center Collaborative Study of Cardiovascular Epidemiology 1992-1994), China MUCA 1998, InterASIA (International Collaborative Study of Cardiovascular Disease in Asia), and CIMIC (Community Intervention of Metabolic Syndrome in China and Chinese Family Health Study). The detailed study design for China MUCA (1992-1994),¹ China MUCA 1998,² InterASIA³ and CIMIC⁴ have been published elsewhere. The **China MUCA (1992-1994)** was established from 1992 to 1994 and used a cluster random sampling method to select participants aged 35 to 59 years from 14 clusters in China.¹ These 14 clusters were selected based on geographic region and urbanization, with about 1000 or 2000 participants (appropriately 50% male and 50% female) in each cluster. The **China MUCA (1998)** was established in 1998 with a cluster random sampling method.² Fifteen clusters were selected in China that was also based on geographic region and urbanization, with about 500 males and 500 females aged 35 to 59 years in each cluster.² **InterASIA**, which was established from 2000 to 2001, selected a nationally representative sample aged 35 to 74 years in China using a 4-stage stratified sampling method based on geographic region (northern versus southern China, divided by the Yangtze River) and urbanization (urban versus rural).³ The **CIMIC** study was a large, community-based cohort that was established from 2007 to 2008.⁴ A cluster random sampling method was used to select participants aged ≥ 18 years from 4 survey sites in Shandong, Henan, and Jiangsu provinces based on different economic development levels and geographic regions in central and eastern China. Before the recent follow-up for all four sub-cohorts during 2012-2015, China MUCA (1992-1994) was followed up biennial from 1996 to 2004, China MUCA (1998) and InterASIA cohorts were followed up once from 2007 to 2008. We used identical methods at baseline and follow-up surveys for all four sub-cohorts. A standardized questionnaire was used by trained healthcare staff under strict quality control to collect information regarding demographic characteristics, medical history and lifestyle risk factors.^{1,4}

Table S1. Comparison of models with PM_{2.5} exposure using penalized spline function with different degrees of freedom.

	Model*	AIC
Total stroke	Cox model with PM _{2.5} as linear term	67570.32
	Cox model with ps (PM _{2.5} , df=2)	67568.36
	Cox model with ps (PM _{2.5} , df=3)	67568.86
	Cox model with ps (PM _{2.5} , df=4)	67569.80
Ischemic stroke	Cox model with PM _{2.5} as linear term	43358.08
	Cox model with ps (PM _{2.5} , df=2)	43354.30
	Cox model with ps (PM _{2.5} , df=3)	43354.83
	Cox model with ps (PM _{2.5} , df=4)	43356.07
Hemorrhagic stroke	Cox model with PM _{2.5} as linear term	19432.99
	Cox model with ps (PM _{2.5} , df=2)	19433.85
	Cox model with ps (PM _{2.5} , df=3)	19434.50
	Cox model with ps (PM _{2.5} , df=4)	19436.00

*Stratified Cox proportional hazards regression models, adjusted for age, sex, geographic region, urbanization, education level, smoking status, alcohol drinking, physical activity, body mass index, and hypertension.

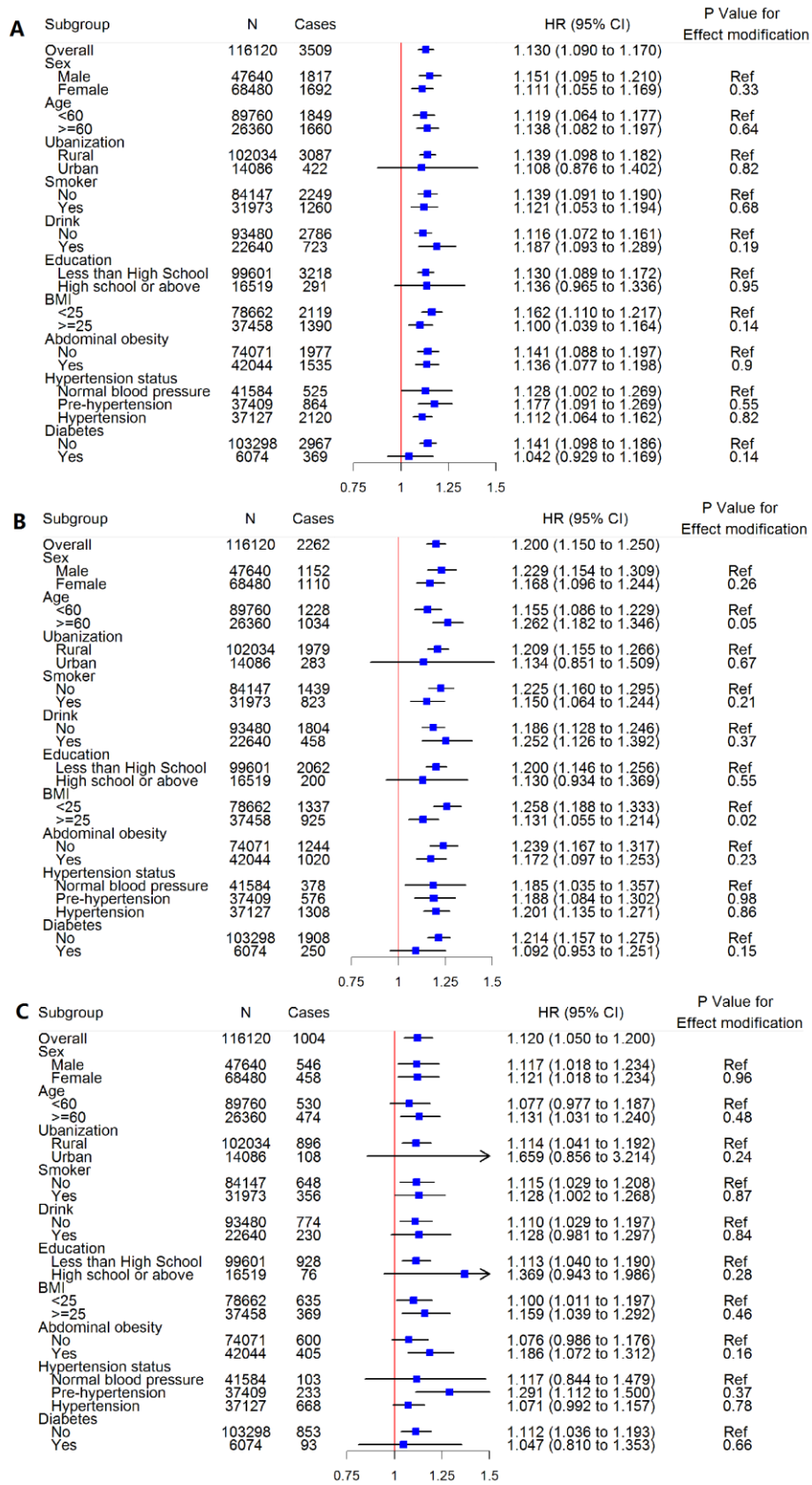


Figure S1. Subgroup analysis for the association of stroke and its subtypes with 10 $\mu\text{g}/\text{m}^3$ increase in $\text{PM}_{2.5}$ by specific characteristics. A, total stroke; B, ischemic stroke and C,

hemorrhagic stroke. Abdominal obesity was defined as waist circumference ≥ 90 cm in men and ≥ 80 cm in women. Both former smokers and current smokers were defined as smokers.

References

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4. Yang X, Li J, Hu D, et al. Predicting the 10-year risks of atherosclerotic cardiovascular disease in Chinese population: The China-PAR Project (Prediction for ASCVD Risk in China). *Circulation*. 2016;134:1430-40.