

## RESEARCH TWITTER

Wei-Yen Lim, Ying Chen, Khoon Leong Chuah, Philip Eng, Swan Swan Leong, Elaine Lim, Tow Keang Lim, Alan Ng, Wee Teng Poh, Augustine Tee, Ming Teh, Agus Salim and Adeline Seow. **"Female Reproductive Factors, Gene Polymorphisms in the Estrogen Metabolism Pathway, and Risk of Lung Cancer in Chinese Women."** *American Journal of Epidemiology*, 2012, 175(6): 492-503.

The authors examined relations between reproductive factors and 5 estrogen pathway gene polymorphisms (CYP17 rs743572, CYP19A1 rs10046, ER $\beta$  rs1256049, ER $\beta$  rs4986938, and COMT rs4680) among 702 Singapore Chinese female lung cancer cases and 1,578 hospital controls, of whom 433 cases and 1,375 controls were never smokers. Parity (per child, odds ratio (OR) = 0.92, 95% confidence interval (CI): 0.87, 0.97) and menstrual cycle length (for  $\geq 30$  days vs.  $< 30$  days, OR = 0.50, 95% CI: 0.32, 0.80) were inversely associated with lung cancer in never smokers, while age at first birth (for ages 21–25, 26–30, and  $\geq 31$  years vs.  $\leq 20$  years, ORs were 1.54, 2.17, and 1.30, respectively), age at menopause (for ages 49–51 and  $\geq 52$  years vs.  $\leq 48$  years, ORs were 1.37 and 1.59; P<sub>trend</sub> = 0.003), and reproductive period (for 31–33, 34–36, 37–39, and  $\geq 40$  years vs.  $\leq 30$  years, ORs were 1.06, 1.25, 1.45, and 1.47; P<sub>trend</sub> = 0.026) were positively associated. Among smokers, parity was inversely associated with lung cancer, but there was no association with other reproductive factors. The COMT rs4680 A allele was positively associated with lung cancer in never smokers (for G/A or A/A vs. G/G, OR = 1.46, 95% CI: 1.12, 1.90) but not in ever smokers. No associations were seen with other polymorphisms. These results support a risk-enhancing role of estrogens in lung carcinogenesis among never smokers.

Wei Huang, Junji Cao, Yebin Tao, Lingzhen Dai, Shou-En Lu, Bin Hou, Zheng Wang and Tong Zhu. **"Seasonal Variation of Chemical Species Associated With Short-Term Mortality Effects of PM<sub>2.5</sub> in Xi'an, a Central City in China."** *American Journal of Epidemiology*, 2012, 175(6): 556-66.

The authors conducted a time-series analysis to examine seasonal variation of mortality risk in association with particulate matter less than 2.5  $\mu\text{m}$  in aerodynamic diameter (PM<sub>2.5</sub>) and chemical species in Xi'an, China, using daily air pollution and all-cause and cause-specific mortality data (2004–2008). Poisson regression incorporating natural splines was used to estimate mortality risks of PM<sub>2.5</sub> and its chemical components, adjusting for day of the week, time trend, and meteorologic effects. Increases of 2.29% (95% confidence interval: 0.83, 3.76) for all-cause mortality and 3.08% (95% confidence interval: 0.94, 5.26) for cardiovascular mortality were associated with an interquartile range increase of 103.0  $\mu\text{g}/\text{m}^3$  in lagged 1–2 day PM<sub>2.5</sub> exposure. Stronger effects were observed for the elderly ( $\geq 65$  years), males, and cardiovascular diseases groups. Secondary components (sulfate and ammonium), combustion species (elemental carbon, sulfur, chlorine), and transition metals (chromium, lead, nickel, and zinc) appeared most responsible for increased risk, particularly in the cold months. The authors concluded that differential association patterns observed across species and seasons indicated that PM<sub>2.5</sub>-related effects might not be sufficiently explained by PM<sub>2.5</sub> mass alone. Future research is needed to examine spatial and temporal varying factors that might play important roles in modifying the PM<sub>2.5</sub>-mortality association.

Shu-Sen Chang, Chi Pang Wen, Min Kuang Tsai, Debbie A. Lawlor, Yi Chen Yang and David Gunnell. **"Adiposity, Its Related Biologic Risk Factors, and Suicide: A Cohort Study of 542,088 Taiwanese Adults."** *American Journal of Epidemiology*, Advance Access.

The authors investigated the association between body mass index (BMI) and suicide in a cohort of 542,088 Taiwanese people 20 years of age or older who participated in a health check-up program (1994–2008). There were 573 suicides over a mean 8.1 years of follow up. There was a J-shaped association between BMI and suicide risk (P for the quadratic term = 0.033) but limited evidence of a linear association (adjusted hazard ratio per 1-standard-deviation increase = 0.95 (95% CI: 0.85, 1.06)); compared with individuals whose BMI was 18.5–22.9, adjusted hazard ratios for those with a

BMI <18.5 or  $\geq 35$  were 1.56 (95% CI: 1.07, 2.28) and 3.62 (95% CI: 1.59, 8.22), respectively. A high waist-to-hip ratio was associated with an increased risk of suicide. There was some evidence for a reverse J-shaped association of systolic blood pressure and high density lipoprotein cholesterol with suicide and an association of higher triglyceride level with increased suicide risk; these associations did not appear to mediate the associations of BMI and waist-to-hip ratio with suicide.

Bing-Yu Chen, Chang-Chuan Chan, Chung-Te Lee, Tsun-Jen Cheng, Wen-Chuan Huang, Ji-Ci Jhou, Yueh-Ying Han, Chu-Chih Chen and Yue Leon Guo. **"The Association of Ambient Air Pollution With Airway Inflammation in Schoolchildren."** *American Journal of Epidemiology*, Advance Access.

The authors conducted a longitudinal study to investigate whether exposure to ambient air pollutants affected inflammatory cells and mediators from nasal lavage in schoolchildren. Study participants were 100 elementary and middle-school students in New Taipei City, Taiwan. A structured respiratory health questionnaire was administered in September 2007, followed by monthly measurement of nasal inflammation from October 2007 to November 2009. During the study period, daily concentrations of air pollutants were obtained from the Environmental Protection Administration monitoring station and the Aerosol Supersite. Mixed-effects models were applied to examine the association between air pollution and nasal inflammatory cells and mediators, including percentages of neutrophils, eosinophils, and monocytes in lavaged cells and interleukin-8. A total of 824 measurements were obtained from 100 participants over a period of 10 months. The level of particulate matter with an aerodynamic diameter of 2.5  $\mu\text{m}$  or less (PM<sub>2.5</sub>) was found to be associated with percentage of neutrophils ( $\beta = 3.45\%$ , 95% CI: 0.89, 6.01) and interleukin-8 level ( $\beta = 29.98 \text{ pg/mL}$ , 95% CI: 3.26, 56.69) in the nasal lavage on the day of exposure. These results indicated that exposure to PM<sub>2.5</sub> might induce nasal inflammation.

Emily A Hu, An Pan, Vasanti Malik, Qi Sun. **"White rice consumption and risk of type 2 diabetes: meta-analysis and systematic review."** *BMJ*, 2012, 344: e1454.

This paper aims to summarize evidence on the association between white rice consumption and risk of type 2 diabetes and to quantify the potential dose-response relation. It searches Medline and Embase databases for articles published up to January 2012 using keywords that included both rice intake and diabetes. The included studies were prospective cohort studies that reported risk estimates for type 2 diabetes by rice intake levels. Relative risks were pooled using a random effects model; dose-response relations were evaluated using data from all rice intake categories in each study. Four articles were identified that included seven distinct prospective cohort analyses in Asian and Western populations for this study. A total of 13,284 incident cases of type 2 diabetes were ascertained among 352,384 participants with follow-up periods ranging from 4 to 22 years. Asian (Chinese and Japanese) populations had much higher white rice consumption levels than did Western populations (average intake levels were three to four servings/day versus one to two servings/week). The pooled relative risk was 1.55 (95% CI 1.20 to 2.01) comparing the highest with the lowest category of white rice intake in Asian populations, whereas the corresponding relative risk was 1.12 (0.94 to 1.33) in Western populations ( $P$  for interaction=0.038). In the total population, the dose-response meta-analysis indicated that for each serving per day increment of white rice intake, the relative risk of type 2 diabetes was 1.11 (1.08 to 1.14) ( $P$  for linear trend<0.001). This paper concludes that higher consumption of white rice is associated with a significantly increased risk of type 2 diabetes, especially in Asian (Chinese and Japanese) populations.

Xiaoyan Lei, Nina Yin, Yaohui Zhao. **"Socioeconomic status and chronic diseases: The case of hypertension in China."** *China Economic Review*, 2012, 23: 105–21.

China has undergone a rapid epidemiological transition from infectious to chronic diseases, a process characterized by widespread under-diagnosis of chronic diseases and low rates of treatment and control. This paper uses hypertension as an example and documents the association of socioeconomic status with various measures of this condition, i.e., prevalence, awareness,

treatment and control. It finds no wealth and education gradients in the prevalence of hypertension. Given education, wealth plays some roles in improving the treatment and control of hypertension. Some associations exist between education and diagnosis/treatment/control in urban areas but not in rural areas. It also finds that the public health care services in China contribute little in informing patients of their hypertension status, suggesting that how to improve the effectiveness of the health care system in dealing with emerging chronic illnesses should be policy priority.

Qun Meng, Ling Xu, Yaoguang Zhang, Juncheng Qian, Min Cai, Ying Xin, Jun Gao, Ke Xu, J Ties Boerma, Sarah L Barber. **"Trends in access to health services and financial protection in China between 2003 and 2011: a cross-sectional study."** *The Lancet*, 2012, 379(9818): 805 – 14.

The authors assessed trends in health-care access and financial protection nationwide between 2003 and 2011. They used data from the 2003, 2008, and 2011 National Health Services Survey (NHSS). Data were disaggregated by urban or rural residence and by three geographical regions: east, central, and west, and by household income. They found that between 2003 and 2011 insurance coverage increased from 29.7% (57 526 of 193 689) to 95.7% (57 262 of 59 835,  $p < 0.0001$ ). The average share of inpatient costs reimbursed from insurance increased from 14.4 (13.7—15.1) in 2003 to 46.9 (44.7—49.1) in 2011 ( $p < 0.0001$ ). Hospital delivery rates averaged 95.8% (1219 of 1272) in 2011. Hospital admissions increased 2.5 times to 8.8% (5288 of 59 835,  $p < 0.0001$ ) in 2011 from 3.6% (6981 of 193 689) in 2003. 12.9% of households (2425 of 18 800) had catastrophic health expenses in 2011. Caesarean section rates increased from 19.2% (736 of 3835) to 36.3% (443 of 1221,  $p < 0.0001$ ) between 2003 and 2011. The authors pointed out that remarkable increases in insurance coverage and inpatient reimbursement were accompanied by increased use and coverage of health care. Important advances have been made in achieving equal access to services and insurance coverage across and within regions. However, these increases have not been accompanied by reductions in catastrophic health expenses. With the achievement of basic health-services coverage, future challenges include stronger risk protection, and greater efficiency and quality of care.

Luxia Zhang, Fang Wang, Li Wang, Wenke Wang, Bicheng Liu, Jian Liu, Menghua Chen, Qiang He, Yunhua Liao, Xueqing Yu, Nan Chen, Jian-e Zhang, Zhao Hu, Fuyou Liu, Daqing Hong, Lijie Ma, Hong Liu, Xiaoling Zhou, Jianghua Chen, Ling Pan, Wei Chen, Weiming Wang, Xiaomei Li, Haiyan Wang. **"Prevalence of chronic kidney disease in China: a cross-sectional survey."** *The Lancet*, 2012, 379(9818): 815 – 22.

The authors did a cross-sectional survey of a nationally representative sample of Chinese adults to measure the prevalence of chronic kidney disease in China. Chronic kidney disease was defined as eGFR less than 60 mL/min per 1.73 m<sup>2</sup> or the presence of albuminuria. The crude and adjusted prevalence of indicators of kidney damage were calculated and factors associated with the presence of chronic kidney disease analyzed by logistic regression. 50,550 people were invited to participate, of whom 47 204 agreed. The adjusted prevalence of eGFR less than 60 mL/min per 1.73 m<sup>2</sup> was 1.7% (95% CI 1.5—1.9) and of albuminuria was 9.4% (8.9—10.0). The overall prevalence of chronic kidney disease was 10.8% (10.2—11.3); therefore the number of patients with chronic kidney disease in China is estimated to be about 119.5 million (112.9—125.0 million). In rural areas, economic development was independently associated with the presence of albuminuria. The prevalence of chronic kidney disease was high in north (16.9% [15.1—18.7]) and southwest (18.3% [16.4—20.4]) regions. Other factors independently associated with kidney damage were age, sex, hypertension, diabetes, history of cardiovascular disease, hyperuricaemia, area of residence, and economic status.

Winnie Chi-Man Yip, William C Hsiao, Wen Chen, Shanlian Hu, Jin Ma, Alan Maynard. **"Early appraisal of China's huge and complex health-care reforms."** *The Lancet*, 2012, 379(9818): 833 – 42.

China's 3 year, CN¥850 billion (US\$125 billion) reform plan, launched in 2009, marked the first phase towards achieving comprehensive universal health coverage by 2020. The government's undertaking of systemic reform and its affirmation of its role in financing health care together with priorities for prevention, primary care, and redistribution of finance and human resources to poor regions are positive developments. Accomplishing nearly universal insurance coverage in such a short time is commendable. However, transformation of money and insurance coverage into cost-effective services is difficult when delivery of health care is hindered by waste, inefficiencies, poor quality of services, and scarcity and maldistribution of the qualified workforce. China must reform its incentive structures for providers, improve governance of public hospitals, and institute a stronger regulatory system. The pace of reform should be moderated to allow service providers to develop absorptive capacity. Independent, outcome-based monitoring and evaluation by a third-party are essential for mid-course correction of the plans and to make officials and providers accountable.

Peng Gong, Song Liang, Elizabeth J Carlton, Qingwu Jiang, Jianyong Wu, Lei Wang, Justin V Remais. **"Urbanisation and health in China."** *The Lancet*, 2012, 379(9818): 843 – 52.

China's rapid urbanisation has important consequences for public health. A provincial analysis of its urbanisation trends shows shifting and accelerating rural-to-urban migration across the country and accompanying rapid increases in city size and population. The growing disease burden in urban areas attributable to nutrition and lifestyle choices is a major public health challenge, as are troubling disparities in health-care access, vaccination coverage, and accidents and injuries in China's rural-to-urban migrant population. Urban environmental quality, including air and water pollution, contributes to disease both in urban and in rural areas, and traffic-related accidents pose a major public health threat as the country becomes increasingly motorised. To address the health challenges and maximize the benefits, innovative health policies focused on the needs of migrants and research that could close knowledge gaps on urban population exposures are needed.

Lulu Zhang, Xu Liu, Youping Li, Yuan Liu, Zhipeng Liu, Juncong Lin, Ji Shen, Xuefeng Tang, Yi Zhang, Wannian Liang. **"Emergency medical rescue efforts after a major earthquake: lessons from the 2008 Wenchuan earthquake."** *The Lancet*, 2012, 379(9818): 853 – 61.

The 2008 Wenchuan earthquake was one of the most devastating disasters in the past 10 years and caused more than 370,000 casualties. The lessons learnt from the medical disaster relief effort and the subsequent knowledge gained about the regulation and capabilities of medical and military back-up teams should be widely disseminated. In this Review the authors summarized and analyzed the emergency medical rescue efforts after the Wenchuan earthquake. Establishment of a national disaster medical response system, an active and effective commanding system, successful coordination between rescue forces and government agencies, effective treatment, a moderate, timely and correct public health response, and long-term psychological support are all crucial to reduce mortality and morbidity and promote overall effectiveness of rescue efforts after a major earthquake.