

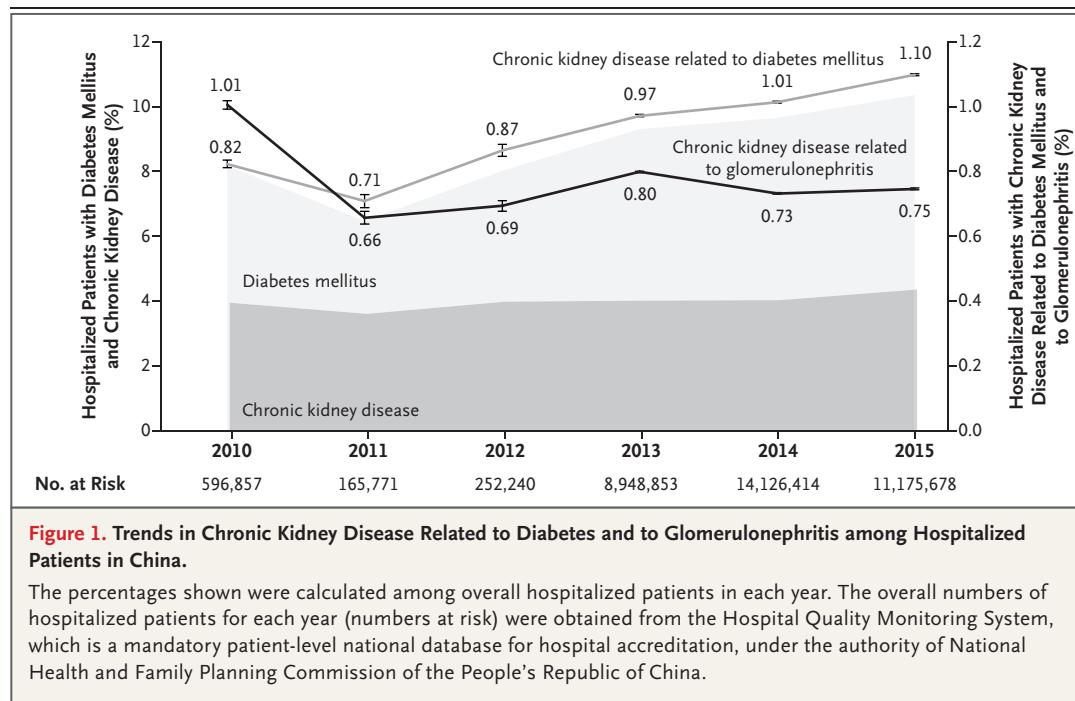
## Trends in Chronic Kidney Disease in China

**TO THE EDITOR:** Diabetes is the leading cause of end-stage kidney disease worldwide, though glomerulonephritis has been the more predominant cause in developing countries.<sup>1</sup> We hypothesized that the surging prevalence of diabetes in developing countries may have a substantial effect on the observed spectrum of chronic kidney disease.

To evaluate trends in chronic kidney disease related to diabetes or to glomerulonephritis, we used two resources — one that tracks hospitalized persons and another that tracks the general population in China. To track hospitalized persons, we used the Hospital Quality Monitoring System, a mandatory patient-level national database for hospital accreditation, under the authority of the National Health and Family Planning Commission of the People's Republic of China. We analyzed a data set of 35.3 million patients hospitalized in class 3 hospitals (which are similar to tertiary hospitals but also provide primary and secondary care to the nationwide patient population) from 2010 through 2015. Diagnosis codes from the *International Statistical Classification*

*of Diseases and Related Health Problems, 10th Revision*, were used to extract cases of chronic kidney disease related to diabetes and to glomerulonephritis. To track the general population in China, we used a general population-based, nationally representative sample of 47,204 participants from 2009 through 2010. We classified chronic kidney disease as being related to diabetes mellitus or to glomerulonephritis according to the patients' medical history and laboratory test results.

In 2010, among hospitalized patients, the percentage with chronic kidney disease related to diabetes was lower than the percentage with chronic kidney disease related to glomerulonephritis (0.82% vs. 1.01%). Starting from 2011, the percentage with chronic kidney disease related to diabetes exceeded the percentage with chronic kidney disease related to glomerulonephritis, and the gap between them increased progressively (Fig. 1). In 2015, the percentage of the hospitalized population with chronic kidney disease related to diabetes and to glomerulonephritis was 1.10% and 0.75%, respectively. In both 2010 and 2015, the percentage of hospital-



ized urban patients with chronic kidney disease related to diabetes was higher than that of hospitalized urban patients with chronic kidney disease related to glomerulonephritis, and the gap had increased by 2015 (1.02% vs. 0.84% in 2010 and 1.55% vs. 0.72% in 2015). However, among hospitalized rural patients during that same time frame, glomerulonephritis-related chronic kidney disease predominated, and the percentage with chronic kidney disease related to diabetes was lower than the percentage with chronic kidney disease related to glomerulonephritis, though the gap had narrowed by 2015 (0.68% vs. 1.51% in 2010, and 0.76% vs. 0.95% in 2015).

In the general population, the percentage with chronic kidney disease related to diabetes also exceeded the percentage with chronic kidney disease related to glomerulonephritis (1.23% vs. 0.91%). When stratified according to the area of residence, the percentage with chronic kidney disease related to diabetes surpassed the percentage with chronic kidney disease related to glomerulonephritis among both urban and rural residents, though the gap was narrower among rural residents — 1.76% (95% confidence interval [CI], 1.61 to 1.93) vs. 0.84% (95% CI, 0.73 to 0.96) among urban residents, and 1.32% (95% CI, 1.17 to 1.47) vs. 0.89 (95% CI, 0.77 to 1.02%) among rural residents. Approximately 21.3% of the participants with diabetes were classified as having chronic kidney disease in our study. Hence, on the basis of a study in 2013 that showed there were 113.9 million persons with diabetes in China,<sup>2</sup> the estimated number of patients with chronic kidney disease related to diabetes in China was 24.3 million, of whom 60.5% have preserved kidney function with slightly increased albuminuria.

Our study indicates that chronic kidney disease related to diabetes has become more common than chronic kidney disease related to glomerulonephritis in both the general population and a hospitalized urban population in China, a finding that is preceded by decades of increasing prevalence of diabetes mellitus.<sup>3,4</sup>

Luxia Zhang, M.D., M.P.H.

Peking University First Hospital  
Beijing, China

Jiayan Long, M.Sc.

Wenshi Jiang, M.Sc.

Ying Shi, B.M.S.

Xiangxiang He, M.Sc.

Zhiye Zhou, M.S.

Yanwei Li, B.Sc.

China Standard Medical Information Research Center  
Shenzhen, China

Roseanne O. Yeung, M.D., M.P.H.

Chinese University of Hong Kong  
Hong Kong, China

Jinwei Wang, Ph.D.

Peking University First Hospital  
Beijing, China

Kunihiro Matsushita, M.D., Ph.D.

Josef Coresh, M.D., Ph.D.

Johns Hopkins Bloomberg School of Public Health  
Baltimore, MD

Ming-Hui Zhao, M.D.

Peking University First Hospital  
Beijing, China

Haibo Wang, M.B., B.S., M.P.H.

First Affiliated Hospital of Sun Yat-Sen University  
Guangzhou, China  
haibo@mail.harvard.edu

Drs. Zhang and H. Wang contributed equally to this letter.

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