# Income, race combine to make perfect storm for kidney disease

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African Americans with incomes below the poverty line have a significantly higher risk of chronic kidney disease (CKD) than higher-income African-Americans or whites of any socioeconomic status, research led by scientists at Johns Hopkins and the National Institute on Aging shows. Conducted in a racially and socioeconomically diverse sample of participants from the city of Baltimore, Md., the study could help researchers eventually develop strategies to prevent CKD in vulnerable populations.

Findings from the study are reported online and appear in the June 2010 print edition of the *American Journal of Kidney Diseases.*

Researchers have long known that advanced CKD is more prevalent among African-Americans than among whites in the United States. Similarly, people of low socioeconomic status also have higher rates of the disease than people of higher socioeconomic status. However, it was unknown whether rates of CKD differ between the races among people of low socioeconomic status.

To investigate, Deidra Crews, M.D., an instructor in the Division of Nephrology at the Johns Hopkins University School of Medicine, and her colleagues used data from Healthy Aging in Neighborhoods of Diversity across the Lifespan (HANDLS), an ongoing study conducted by the National Institute on Aging (NIA), part of the National Institutes of Health. The HANDLS study was started to investigate the influences and interaction of race and socioeconomic status on the development of

health disparities in minorities and people of lower socioeconomic status.

In the HANDLS study, researchers from the National Institute on Aging are following 3,722 African-American and white volunteers initially between the ages of 30 and 64 years from 12 diverse neighborhoods in Baltimore. Volunteer participants are visited periodically by a mobile research van where researchers conduct physical examinations, including blood, urine, and blood pressure tests. The participants also answer a variety of questions about other aspects of their lives, such as employment and finances.

Crews and her colleagues focused their analysis on data regarding creatinine, a protein whose abundance in the blood can be a sign of CKD. Of those 2,375 volunteers whose data they reviewed, 1,420 were African-American and 955 were white. About half of the African-Americans and a third of the whites had incomes below the poverty line, about $20,000 for a family of four.

Using the creatinine measures and data on urine albumin, a urine protein that can also signal kidney problems, the researchers diagnosed CKD in 146 of the participants. Rates among African-Americans and whites were similar, with both at about 6 percent.

Prevalence among those with family incomes below the poverty line was 27 percent greater than those living above it. However, when the researchers combined socioeconomic and racial data, they found that low socioeconomic status was associated with a greater prevalence of CKD in African-Americans, but not whites. African-Americans living below the poverty line were 33 percent more likely to have CKD than whites of similar socioeconomic status. The finding persisted even after Crews and her colleagues accounted for other factors known to increase the rate of CKD, including diabetes, high blood pressure, and tobacco,

alcohol and drug use.

Crews and her colleagues believe that there are several reasons why socioeconomic status seems to affect the rates of CKD in African-Americans and whites differently, including genetics, stress, and health behaviors such as diet and exercise habits. She notes that the next step will be to tease out the different factors that might contribute to CKD in low-income African Americans.

"We need to figure out why this is happening so that we can develop effective strategies to prevent CKD from developing," Crews says.

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