

## **Causes of chronic kidney disease and their associations with cardiovascular risk and disease in a sub-Saharan low-income population.**

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### **Abstract**

**Introduction:** The prevalence of chronic kidney diseases (CKD) is more than 10%, worldwide. There seem to be differences in the causes of CKD between high- and low-income countries.

**Methods:** In a prospective cross-sectional study, we reviewed presumed causes of CKD and associated cardiovascular risk factors in 743 consecutive patients from a low-income population at the nephrology clinic at Chris Hani Baragwanath Academic Hospital.

**Results:** Hypertensive nephropathy (HNP) (60.2%) is by far the leading cause of CKD followed by diabetic nephropathy (DNP) (24.4%), HIV-associated nephropathy (HIVAN) (20.0%), and glomerular disease (13.6%). Traditional cardiovascular risk factors were identified to be hypertension (87.6%), dyslipidaemia (59.9%), diabetes (25.8%) and smoking (6.7%). HIV infection was the leading non-traditional cardiovascular risk factor at 39.4% of the study population. Established cardiovascular disease was 5.6% in this cohort. Pulse pressure as a marker of aortic stiffness was larger in patients with concurrent HNP and DNP than in those with HNP alone. HNP and DNP were associated with pulse pressure independent of one another. The product coefficient mediation analysis, mean or distention arterial pressure, accounted fully for potential effect of DNP on pulse pressure. HNP or concurrent HNP and DNP or DNP were associated with markedly increased prevalence of uncontrolled systolic blood pressure. Demographic characteristics and DNP adjusted products of coefficient mediation analysis confirmed that mean arterial pressure did not mediate any potential effects of HNP on pulse pressure. In the population at large, 70% of patients with diabetes have comorbid hypertension that increases the cardiovascular risk. In this study cohort, 93.6% with diabetes had concurrent hypertension.

**Conclusion:** HNP is by far the leading presumed cause of CKD. Traditional cardiovascular risk factors such as hypertension and diabetes take the lead in this study group. Aortic stiffness is a key component of CKD induced cardiovascular disease.