Popular science summary

Introduction:
The burden of diabetes is increasing in sub-Saharan Africa, including among people living with HIV. We assessed the prevalence of diabetes and the roles of HIV, antiretroviral therapy (ART) and traditional risk factors among adults in Tanzania. In addition, capacity to conduct research to address the impact of HIV and non-communicable diseases like diabetes in this low-income setting is limited. We analysed diabetes-relevant baseline data from 1,947 adult participants in the CICADA study in Mwanza, Tanzania: 655 HIV-uninfected, 956 HIV-infected ART-naïve, and 336 HIV-infected persons on ART. WHO guidelines for haemoglobin A1c (HbA1c) and oral glucose tolerance test (OGTT) were used to define diabetes and prediabetes. Risk factors were evaluated using multinomial logistic regression analysis. Relative risk ratios (RRR) were generated comparing participants with diabetes and prediabetes against the reference of those with no diabetes. In addition, to help build research capacity 2PhDs and one MSc were recruited and trained.

Results: Mean age was 41 (SD 12) years; 59% were women. The prevalence of diabetes was 13% by HbA1c and 6% by OGTT, with partial overlap among participants identified by the two tests. Relative to HIV-uninfected, HIV-infected ART-naïve persons had increased relative risks of diabetes (HbA1c: RRR = 1.95, 95% CI 1.25-3.03; OGTT: RRR = 1.90, 95% CI 0.96-3.73) and prediabetes (HbA1c: RRR = 2.89, 95% CI 1.93-4.34; OGTT: RRR = 1.61, 95% CI 1.22-2.13). HIV-infected participants on ART showed increased risk of prediabetes (RRR 1.80, 95% CI 1.09, 2.94) by HbA1c, but not diabetes. CD4 count < 200 cell/µL at recruitment increased risk and physical activity decreased risk of diabetes by both HbA1c and OGTT. Regarding capacity building, 1 PhD and MSc completed studies within the study duration and the remaining PhD successfully defended her PhD 6 months later. 8 conferences were attended and 15 scientific papers published, 2 major grants and 5 research fellowships granted.

Conclusion: The burden of diabetes among HIV patients is very high in Tanzania and efforts to integrate HIV and diabetes care will help reduce the burden of HIV-diabetes co-morbidity in this low-income setting. Capacity building in this low-income country is contributing to the creation of critical mass of scientists who help to sustain research in the country.

Recommendation: Diabetes services should be integrated in HIV clinics to reduce the burden of HIV and non-communicable co-morbid and improve health of HIV-infected patients in HIV-high burden settings. Future research calls should continue to include capacity building aspects.