

Title of Research: A Comparative Assessment of Cardiovascular Risk Disparities Among People Living with HIV in Rural and Urban Communities of Oyo State, Southwestern Nigeria

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ABSTRACT

Background: With antiretroviral therapy (ART) extending survival, people living with HIV (PLHIV) now face a 1.5-2 times higher risk of cardiovascular disease (CVD) than the general population, driven by traditional and HIV-related risk factors. These risks are further shaped by geographical location, as differences in healthcare access, lifestyle, and socio-economic conditions between rural and urban areas may influence cardiovascular outcomes. This study therefore assessed CVD risk disparities among PLHIV across rural and urban communities of Oyo State, Nigeria.

Materials and Methods: We conducted a cross-sectional analytical study among PLHIV in Oyo State. Using a multi-stage sampling technique, we recruited 230 respondents from rural and urban antiretroviral therapy (ART) facilities. A pre-tested, interviewer-administered questionnaire was used to obtain information on sociodemographic and behavioural attributes. Lipid analysis, anthropometric, blood pressure, and fasting blood glucose measurements were done using standard protocols. Respondents' CVD risk was assessed using WHO risk models. Data were analyzed with

IBM SPSS version 25; bivariate analyses used Student's t-test and Chi-square test, while binary logistic regression identified determinants of CVD risk at a 5% significance level.

Results: The mean age of participants in the rural and urban was 38.7 ± 11.8 and 47.3 ± 11.6 respectively. Overall, 63.6% demonstrated good knowledge of CVD risk factors, with slightly higher prevalence among urban PLHIV (64.7%) than rural counterparts (62.5%). Common risk factors were hypertension (30.9%), physical inactivity (30.4%), obesity (19.1%), overweight (26.1%), low HDL-C (71.3%), hypertriglyceridemia (31.7%), elevated total cholesterol (10.4%), raised LDL-C (25.2%), diabetes (11.7%), and smoking (5.2%). Urban PLHIV consistently demonstrated higher proportions of elevated CVD risk compared with their rural counterparts; 27.0% versus 14.8% using the cholesterol-based WHO/ISH model, and 21.7% versus 7.0% using the non-cholesterol-based model.

Reliability analyses showed strong agreement between cholesterol-based and non-cholesterol WHO/ISH models [Cohen's Kappa = 0.72, Receiver Operation Characteristic Curve (ROC) = 0.90, $p < 0.001$]. The Intraclass Correlation Coefficient (ICC) demonstrated excellent consistency (0.86, $p < 0.001$). Bland-Altman plots indicated mean differences close to zero ($\mu = 0.35$), confirming the absence of systematic bias.

Respondents aged 45 -59 years were about eleven times more likely to have high CVD risk than those under 25 years (OR = 11.42, 95% CI: 246.84-973.27, $p < 0.001$), while those age ≥ 60 years were about eight times more likely to develop high CVD risk (OR = 8.43, 95% CI: 9.90 -123.59, $p < 0.001$). Married respondents were over five times more likely to have high CVD risk (OR = 5.44, 95% CI: 1.764-16.760, $p = 0.003$), while physically inactive individuals were about four

times more likely (OR = 4.325, 95% CI: 1.179 -15.864, $p = 0.023$). Urban residence was associated with lower adjusted odds (OR = 0.14, 95% CI: 0.029 - 0.628, $p = 0.011$).

Conclusion: This study demonstrated that urban PLHIV had significantly lower odds of elevated CVD risk compared with their rural counterparts. Integrating routine CVD risk assessment into HIV care, alongside targeted lifestyle modification and community-based prevention strategies, is essential for reducing rural-urban disparities and preventing long-term cardiovascular complications.

Keywords: People Living with HIV, Cardiovascular Disease Risk, WHO Prediction Models, Rural-Urban Disparities, Nigeria